Perceptions of

Chinese People in New Zealand

Towards Nature and Possums

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Abstract

This study explores perceptions of Chinese people in New Zealand toward nature and the environment, particularly towards possums, an introduced pest species that people have been trying to eradicate from New Zealand for decades. Perceptions of possums by Chinese people and other people living in New Zealand have been compared and contrasted in the study as well. Chinese people who have never been to New Zealand were excluded from the research. Before the research, previous research studies on topics relating to public perceptions of various ethnicities towards nature or pests in New Zealand, were investigated as supportive backgrounds for this study. Only a few studies were found. Out of those studies, there were either no Asian people separated as one ethnic group, or they were under-represented. This research, through the combination of quantitative survey research and qualitative research interviews with Chinese academics in New Zealand, has deduced that: Chinese people in New Zealand have **no** less knowledge about possums in terms of their effects than New Zealand people have; also, Chinese people have more neutral perceptions towards possums compared with those of New Zealanders.

However, as the survey received rather limited respondents, even with the complementary data from qualitative interviews with Chinese academics, we cannot conclude that the survey results represent all the Chinese people in New Zealand. My small non-representative sample was of people with higher average education and with more outdoor activities than the Chinese population in New Zealand as a whole. As a case study, this research can still help guide future research in New Zealand in terms of differences between ethnicities and quantitative research surveys. Further research could focus on using quantitative research

methods with available data in New Zealand, to differentiate the perceptions among different ethnicities, in order to help future policymaking and policy execution.

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Chapter One: Introduction

1 Introduction

In 2012, it was the first time I landed at New Zealand, this beautiful, fresh land under pure blue sky and white clouds. As a newcomer to this country, the first time I went to the Willow Bank Wildlife Reserve located in Christchurch, the third biggest city in New Zealand, I was shocked. I could not believe my eyes when I saw at least four types of pigs and three types of rabbits were raised in a zoo, which was supposed to have some more “precious” and “exotic” animals, according to my cultural background, like elephants, or giraffes. A zoo, from for the researcher’s perspective, should have the function of either educating people with animals different from native animals, or conserving native precious animals from extinction. By no means should a pig or a rabbit be raised in a zoo which is funded by government revenue. For quite a long time, I could not stop thinking about why. Yes, why. Why do New Zealand people put those species that can be seen every day and everywhere in China, normal in New Zealand as well, in a zoo, a place that should conserve and protect species that are more precious? If there are pigs and rabbits in a zoo, why are people in New Zealand still willing to pay for the ticket and have a closer look at them? Why was I shocked?

Not long after, I became used to seeing ducks wandering across paths, approaching people for food, or even chasing after humans for food. Seagulls scramble for food when being fed, or for fishes to be just hooked up. I got used to being scared while walking and a duck quacked for being interrupted from its nap. I was not even too much surprised when I was bitten by a seal, while I was passing through its “territory”, and being attacked as an enemy. If we regard animals in New Zealand as a whole, I was bullied by animals in New Zealand.

Yet, I enjoy it. That is to say, people in New Zealand are enjoying this way of living with animals.

2 New Zealand Attitudes Toward Animals

Humans and animals in New Zealand are in such a harmonious relationship that 64% of New Zealand households are home to at least one companion animal. There is an overall population of over 4.6 million companion animals in New Zealand which outnumbers the human population (New Zealand Companion Animal Council Inc, 2016a). Over half of the people who do not have companion animals reported being willing to have one. The pet varieties range widely: cats, dogs, fishes, birds, rabbits, horses and other species. One in ten cat owners and one in five dog owners have insurance for their animals (New Zealand Companion Animal Council Inc, 2016a). Companion animals were supported by animal products and services at an estimated cost of $1.8 billion in 2016, which was increased from $1.6 billion in 2011 (New Zealand Companion Animal Council Inc, 2016a). Animal welfare has been observed under the Animal Welfare Act, which sets out the obligations of the animal owners or people in charge of animals, that they have to meet animals' physical, health, and behavioural needs, and must alleviate pain or distress (Ministry for Primary Industries, 2016, July 29). The Act defines 'physical, health, and behavioral needs' as: *"proper and sufficient food and water; adequate shelter; the opportunity to display normal patterns of behaviour; appropriate physical handling; and protection from and rapid diagnosis of, injury and disease.*" (Ministry for Primary Industries, 2016, July 29) There are also a lot of animal protection organizations and animal welfare groups in New Zealand focusing on protecting animals through enhancing their welfare, and decreasing animal abuse and cruelty through education or legislation. The Royal New Zealand Society for the

Prevention of Cruelty to Animals (SPCA) works towards preventing the cruelty and suffering of animals through education and enforcement. Royal Forest and Bird Protection Society of New Zealand (Forest and Bird) aims at protecting New Zealand indigenous plants, animals and wild places. Save Animals from Exploitation (SAFE) actively campaigns to protect the welfare of all animals. The Ministry for Primary Industries aims at helping maximise exportation for primary industries, through ensuring the safety of food products, increasing the sustainability of resource use and protecting New Zealand from biological risk. This includes policing the welfare of farmed animals.

Yet, on the other hand, people in New Zealand are hunting, fishing, and trapping animals for sport. Fishing has been on the top twenty most popular sport and recreation activities in New Zealand since 2007 (Sport New Zealand, 2015). There were 19.5% of participants in a survey conducted by Sport NZ's research team in 2013-2014 who reported having participated in fishing over the last twelve months (Sport New Zealand, 2015). New Zealand still relies on primary industry. Export of meat and milk products is still a major part of the economic foundation of the country and favoured by New Zealand people (Potts & White, 2008). Even though as a country New Zealand relies on primary industry- animal welfare has been ensured from the birth of the animal, to the transportation of poultry or live animals- the main focus of ensuring animal welfare has been to retain the primary exportation and maintain our reputation internationally of the primary product market of the country[1]. Food supply (production, including an allowance for home production plus imports minus exports plus stock changes) of butter and meat fats per capita in New Zealand was reported at the highest level among OECD countries in 1995 (Laugesen & Swinburn, 2000). The vegetarian

[1] https://www.mpi.govt.nz/exporting/, website of the Ministry of Primary Industry, reporting the importance of the primary industry to New Zealand, simultaneously with regulations in maintaining animal welfare in primary industries globally.

population in New Zealand was reported marginal, at the lowest level among OECD countries, possibly the world (Laugesen & Swinburn, 2000; Potts & White, 2008). The proportion of vegetarians in New Zealand was reported to be climbing though, from 8.1% in 2011 to the latest report in 2015 as 10.3% of New Zealanders who said that they were always or mostly vegetarian, compared with the overall population of 4 million (Roy Morgan Research, 2016, Augest 2). In particular, the age group 14-24, had an overall 4.7% increase over five years from 2011-2015 (Roy Morgan Research, 2016, Augest 2). The overall vegetarian population in New Zealand was still low.

For pest animals in New Zealand, such as possums, rabbits, feral cats, and other introduced mammals, the New Zealand government encourages the public to accept they need to be killed. Academics do research on how to control their numbers. A school ran a competition among pupils to dress up dead possums. International travellers are encouraged to buy possum fur products to "do New Zealand's biodiversity a favor" (A. Fraser, 2006; W. Fraser, 2001; Isern, 2002; Kerry, 2012, Feburary 5; Milton, 2011, p. 10; Wilkinson & Fitzgerald, 2006).

Having lived in New Zealand for a while, I understand that in the Willow Bank Wildlife Reserve, "heritage New Zealand" animal species, pigs and rabbits and other species brought here in the last centuries were kept as a memorialisation and to indicate how the same species looked centuries ago, and how they have evolved[2]. I have also figured out that people in New Zealand have a strong perception of protecting their environment and natural heritage. According to a survey generated by Lincoln University in 2010, public perception toward natural environment in New Zealand ranked as the fourth most important role

[2] http://www.willowbank.co.nz/our-animals, has the introduction of Willow Bank Wildlife Reserve to their animals.

among quality of life, public health system, quality of education, quality of the natural environment, crime prevention, level of wages and salaries, and level of economic growth (Hughey, Cullen, & Kerr, 2010). It was more important than economic growth, crime prevention and level of wages and salaries. This means that, on the one hand, they consider precious and conserve natural heritage and native flora and fauna; on the other hand they are attempting to eradicate all the species which harm what they are protecting, such as introduced feral species. Those opposite attitudes and behaviours toward animals in New Zealand make a study into the animal field in this country worth investigating.

3 History of Possum Control Methods in New Zealand

Possums have become a problem in New Zealand since the last century. They were introduced for economic purposes by the early settlers to establish a fur industry in 1837, and became problematic when the possums' population became out of control in the mid-twentieth century, and massive amounts of native fauna and flora of New Zealand had been eaten by them that costing both directly and indirectly to New Zealand's economics (Blaschke, Boshier, Chisholm, Cooper, & Mormorunni, 2000; Potts, 2009). Since the 1960s, anti-possum rhetoric has intensified in New Zealand, and various possum population control methods were attempted (Potts, 2009). Research analysing possum biology, such as feeding patterns, activity patterns, social behaviour, reproduction patterns, and diseases were done in New Zealand as well, combined with analysing possum impacts, and possum control and management methods, as well as their effectiveness (Montague, 2000). Scientists in environmental field and pest control fields have also taken years of study into how to control the possum population effectively and efficiently (McIlroy, 1983; Morris & Weaver, 2003; Powlesland, Knegtmans, & Marshall, 1999). There is a similarity with rabbits. Both are small

furry herbivorous creatures whose population grows fast in New Zealand. Possums were poisoned using sodium fluoroacetate (compound 1080), which was proven effective in rabbit population control, from the early population control years (Blaschke et al., 2000). Though the side effects of the use of 1080 were scientifically discussed broadly over years, it was still regarded as the most effective possum control method in practice with the most cost-effective ratio (Eason, Wright, & Fitzgerald, 1992; Lloyd & McQueen, 2000). Trapping and shooting possums were undertaken in New Zealand in the meanwhile (Blaschke et al., 2000). Leg holding traps that capture animals by the leg but do not kill them directly, cage traps that capture the animal alive and unharmed, and kill traps that kill the target animal rapidly when the trap is triggered, are the main types of traps used in New Zealand to kill possums, rats and stoats (Wright, 2011).

With the growing global animal advocacies and concerns about animal welfare, there are increasing discourses in animal protection in New Zealand. Voices other than the anti-possum dialogue in possum control appeared. Concerns about the use of 1080 increasingly intensified too[3]. It is reported not only effective in pest control, but also criticized for posing a risk to indigenous species such as kea (Crowell, Booth, Cowan, Fairweather, & Westbrooke, 2016). In 2007, Kay Milton, professor of Social Anthropology in the School of History and Anthropology of the Queen's University Belfast, questioned that possums exist both in New Zealand and Australia, yet they are cute in Australia but not in New Zealand, even if they are the same species (Milton, 2011). She argued that possums had been over-exploited and demonised in New Zealand as they carry diseases and are unwanted aliens (Milton, 2011). Potts (2009), Associate Professor in the Canterbury University, criticised the anti-possum rhetoric in New Zealand, for treating possums unfairly and in-humanly. They were brought in

[3] http://www.doc.govt.nz/1080, 1080 poison for pest control at Department of Conservation;

by humans for economic purposes and as were early non-human settlers in the assimilation process, but were exploited when they damaged the economic benefit of humans (Potts, 2009). They have been poisoned in tourist attractions, been killed for their fur for economic purposes, and been used in medical experiments for researching on prostatic hyperplasia (Potts, 2009). Other researchers also started to think about how possums feel when they were poisoned, or trapped.

4 Aims and Orientations of The Research

The researcher, with academic background in general natural resource study and more specifically in land resource management, realises that humans are core players in environmental conservation to achieve sustainability. That is, we have to understand how people view a certain topic in terms of the history, society, and even political back stories of the research topic in the research country. So that we would have the ability to tell the orientations of people's perceptions and legitimate the issue accordingly, to be able to protect and conserve environment better and effectively. Hence we would be able to sustain the whole ecosystem and economic profit in the host country. As for this research, we have to understand the viewpoint of the people in New Zealand toward animals, particularly toward possums, that we are able to improve legitimate, humane possum control, in the process of sustaining the economic profit of the country while not reducing animal welfare.

Many researches into possum control have been done, in cooperation with nationwide surveys in public perceptions toward possums and pests in New Zealand. However, there was no single research mentioned in detail that clarified the perceptions of the general public from various ethnicities of recent migrant groups. Research into public perceptions in the management of possums was carried out by the Department of Conservation in 1996

(Fitzgerald, Saunders, & Wilkinson, 1996). The report targeted possums, and investigated public attitudes into possum population management. In the study, the participants were asked how seriously they think of possums as a pest, and their acceptance of some of the possum control methods at that time. The telephone survey method was adopted in recruiting participants into the survey. Participants' perspectives into various possum control methods were explored and analysed. Participants' ages, occupations, residence, and educational backgrounds were all asked in the survey, but not ethnicity. In the year 2001, surveys of general public views into introduced wildlife in New Zealand were conducted, to explore the attitudes to introduced species including wasps, possums, rabbits and other species, and attitudes to pest management (W. Fraser, 2001). This study categorised all the participants into various ethnic groups, but only Maori, European, other Polynesian groups were clarified, and other ethnic groups were all regarded as one group. Landcare research group in Lincoln, Canterbury, had a survey in 2006, which analysed public attitudes to possum control methods, particularly about the acceptance of possum fertility control methods and genetic engineering (Wilkinson & Fitzgerald, 2006). Through quantitative research methods, participants from different occupations, genders, age groups and educational backgrounds were approached to provide their valuable opinions into the research topic. No ethnicity questions were asked in this study.

Lincoln University had repeat surveys on the same topic over several years, aiming at investigating the public perceptions toward the environment in New Zealand. The 2006 survey was the first time Asian ethnicity as a separate ethnic group appeared in a nationwide survey analysing public perceptions toward the environment or pests in New Zealand (Cullen, Hughey, & Kerr, 2006). In the 2008 survey, ethnicities of the participants were clarified to generate perceptions of each ethnicity group in fresh water management

and satisfactory status of the current pests control methods in New Zealand (Hughey, Kerr, & Cullen, 2008). In the study, participants were categorized into Maori, Pacific Islander, Other, New Zealand European, and Asian as a whole. In a survey in 2010, the Asian ethnic group was also categorized as a whole group (Hughey, Kerr, & Cullen, 2010). In a most recent nationwide survey conducted by Lincoln University in 2013, public perceptions in New Zealand toward possums and other pest species were asked again (Hughey, Kerr, & Cullen, 2013). In the study, participants' ethnicities in Maori, New Zealand European, Pacific Island, Asian and other were provided as a descriptive feature of the participants in the result analysis.

With more immigrants coming into New Zealand in recent years, the Chinese ethnic group, as the biggest immigrant group, would play a bigger part in contributing to the policymaking and execution, as for this study, in possum population control. Because no researches in public perceptions toward pests or pest controls in New Zealand have mentioned Chinese people as an individual ethnicity yet, this study is aiming at filling the gap caused by the lack of investigation of the Chinese ethnic group's role in public perceptions of possums in research in New Zealand. It assumes that a better understanding of Chinese perceptions would help in understanding both the public response to regulation of the possum control and pest control, and the issues raised when new ways are proposed to find a more effective way of controlling possum's population in New Zealand.

5 Research Questions

As the researcher has conducted researches into the environmental policy field, land resource management, natural resources studies, also as a person with a different cultural background than New Zealand culture, I am happy to research public perceptions toward

animals in New Zealand in terms of cultural backgrounds. Particularly, I focused on the perception of differences toward possums between people who are from Mainland China, and people from New Zealand.

Detailed research questions are below:

1) How much knowledge about possums do Chinese people or Asian people in New Zealand have?
2) What are the general perceptions of Chinese people in New Zealand toward possums?
3) How does Chinese knowledge and perception about environmental issues compare with that of New Zealanders in general?
4) How do perceptions of people in New Zealand in terms of possums and pests change over years?
5) How do Chinese people view social surveys and how much acceptability do Chinese people have toward social surveys?

To answer those research questions, my research project was designed from 1st of July 2015, to 30th of September 2016. The question purposely detailed the ethnicity of participants, so that perceptions of each ethnic group could be generated and analysed.

The top two research questions were answered by an online questionnaire and commented on by several interviewees and data analysis. In the online questionnaire, participants' countries of origin were asked as a screening question, so that the analysis could focus on people whose ethnicity was self-selected as Mainland Chinese and New Zealand European or New Zealand Pakeha. In the questionnaire, personal habits such as outdoor activities were asked to provide a general idea of how likely would the participants be to interact with

nature in New Zealand, so that the more likely they are to interact with nature in New Zealand, the more possibilities of them interacting with possums as well. They were also asked questions on dietary habits and if they were members of any animal protection or environmental group, as this may be associated with perceptions toward nature and possums. Participants' perceptions toward pests and pest management were also included in the survey. Besides, some scientific knowledge was asked to testify the knowledge extent of the participants into the effect of possums in New Zealand.

The third research question was interpreted by data comparisons of all the data sources, including the data the researcher collected and some secondary datasets. The fourth research question was explored by the interviewees' perceptions and the researcher's personal experience and some other literature about surveys into Chinese people. Detailed research methods and the project will be interpreted in following chapters.

6 Chapter Outlines

This section will outline the whole research process from the following chapters. Chapter One provides the orientation from which the research was generated, both from what I have experienced in New Zealand as a person who has grown up in China in a completely different cultural background, and the history of possum control in New Zealand. Research questions are discussed in the Introduction Chapter to structure and guide the whole research. Chapter Two discusses the history of New Zealand immigration and perceptions of nature and wildlife, to be able to introduce the importance of the study and the literature basis of the research. The history of Chinese people immigrating to New Zealand is also discussed in Chapter Two, to give an overview of the increasing importance of Chinese people to New Zealand economically and socially. Chapter Three discusses how the research

has been done, why the particular method was picked for this study, and what did the researcher did in investigating the research questions in detail. In terms of the complexity of the research participants, Chapter Four gives an overview of the participants involved in each research method, and the feasibilities and validities of those participants. This research generates comparisons of my survey results with nation-wide surveys done in previous years, hence similarities and differences between my participants and participants of national surveys are discussed in Chapter Four as well, to provide brief ideas to the reader about the expectations of the research results. Chapter Five discusses perceptions of Chinese people to nature and environment in New Zealand; in particular, possums. Their attitude and preference changes to all aspects related to possums and nature in New Zealand will be compared in the Chapter Five as well. Chapter Six concludes the whole thesis. General descriptions of the research are also generated in the Conclusion Chapter, from purposes of the research, methodologies of the research, to a brief result of the study and the indications coming from the results and the future research directions. The online questionnaire and full Human Ethnic Committee Application are listed in the end of this thesis in the Appendices Chapter.

Chapter Two: Human and Animal Immigration in New Zealand

1 Humans

1.1 History of The Discovery of New Zealand to The End of the Nineteenth Century

New Zealand is a nation of immigrants. It is reported to be the last major landmass settled by humans, whose earliest navigators and explorers were Maori in the thirteenth century (Smith, 2011). They lived in a place described as "*The Long White Cloud*" with little exploration and life remained raw and simple (D. S. Garden, 2005, p. 135). Even though Maori people had lived on the land for over centuries, James Cook, a British man, was credited with the discovery of New Zealand in 1769. He landed on the island and "*hoisted the Union flag and dignified it with the name of Queen Charlotte Sound and took formal possession of it and the adjacent lands in the name and for the use of his majesty*" (Moon, 2013, p. 22). Explorations of the islands and discovering the valuable resources for potential settlement began then.

a) The Treaty of Waitangi

The early settlement by British pioneers in New Zealand had complex purposes; for a planned colonization, for personal reputation, or for economic ambition, which were all aimed at their own fulfilment (Moon, 2012, p. 154). Those British pioneers attempted to explore this new place for a more open community to live in, with more living resources and better living conditions. From the viewpoint of the British government, New Zealand was a "potential useful colony", as a possible way of alleviating poverty through using resources on the islands and the population extension by emigration from Britain, as well as a means of

expanding Christianity (Moon, 2012, p. 160). It was a useful colony, but, the territory was comparatively isolated and communication with Maori people was difficult. There were other potential colonial places at that time that could offer cheap resources too, hence New Zealand was not the only choice open to the British government (Moon, 2012, p. 160). Early settlers were pioneers and explorers, with promises from the government of having great wealth and a prosperous future. They soon found New Zealand to be a place with abundant resources in the marine area, good quality timber and flax, as well as fertile lands which were suitable for farming and cropping (Moon, 2012).

In 1840, the Treaty of Waitangi was signed by a crown representative and over 500 chiefs, through which, all rights and sovereignty were ceded to the Queen, all territorial rights belonged to chiefs and their tribes (New Zealand Registrar General's Office et al., 1893; Orange, 2011). Indigenous people were promised the rights to their lands, and the rights to manage their lands, such as sell them to British immigrants. In 1840, more lands were purchased by British companies, 160,000 acres and a further 50,000 acres from the indigenous people for a small amount of money and funds were used for shipping emigrants to New Zealand (Smith., 2014, February 3, p. 67). The lands purchased were used for farming livestock, timber, and planting crops. In addition, animals were brought into New Zealand with the early settlers, for food, such as feral goats; for economic industries, like possums; and for pest control purposes, such as ferrets which were brought in to control the rabbit population in the early years (Department of Conservation, 2016, September 21).

The big amount of land required more labourers to work on it. From 1840 to the end of 1850, the New Zealand Company, or companies developed from it, established approximately 12,000 settlers, and the numbers soon grew (Tony, 1997, p. 67). In 1858, the

non-Maori population of New Zealand was reported as 59,277, and more people were shipped in for the business of colonising purposes (Tony, 1997, p. 70). However, those early settlers still regarded Britain as home, and New Zealand as a place to make a living in (Beaglehole, 1900). They devoted themselves to the farming, exploring resources and making money so that they would have enough to help their family back in Britain.

b) Gold Rush Time

In 1852, a Tasmanian man found a small amount of gold at Driving Creek near the town of Coromandel in the North Island of New Zealand, at a time when some settlers in New Zealand went to gold rushes in Australia and California. This find attracted people in New Zealand to stay, and people from outside New Zealand to come, particularly when the gold rush had almost ended in Australia and California in America. Gold miners from these two places and other countries were rushed to New Zealand for gold digging. In 1866, 12 Chinese miners arrived in New Zealand. This was recorded as the first time Chinese migrants had come to this country (Taher, 1965).

The result of the flow of those immigrants was that, in 1861, around 35% of the New Zealand population was born in England, 28% was New Zealand born, others were from Scotland, Ireland, Wales and Australia, and other countries (Tony, 1997, p. 8). After this, the net immigration (the difference between immigrants and emigrants) to New Zealand between 1861 and 1892 surged and was suggested as 272,990 by New Zealand arrival statistics (New Zealand Registrar General's Office et al., 1893; Tony, 1997). Immigrants found New Zealand a more open society that attracted those who wished for this and allowed them to get a better job and fulfil their ambitions, in a society with less religious persecution, political oppression, racial intolerance and climate discomfort (Lane, 1970;

Tony, 1997). The history of western immigrants who came to New Zealand was of a relatively bright and easy life. For most of the British-born immigrants, settling down and being accepted by the host society was more akin to a transfer to a branch with a similar culture (Roy, 1970).

c) Chinese People in New Zealand

Due to being less competitive and industrious than Chinese gold miners in the 1860's, Australian gold miners generated antipathy toward Chinese people and this resulted in a broad spread of bad feeling to other parts of the country and all over the community (W. T. Roy, 1970). Even after the Parliamentary Select Committee reported in 1871 that there was nothing to indicate that Chinese people would jeopardize economic profit or public health, the prejudice toward the Chinese ethnic group in New Zealand still was not stemmed (W. T. Roy, 1970). Chinese immigrants were reported as having a resident population of over 5000 persons from 1874 to 1881, which accounted for 1 percent of New Zealand's non-Maori population (Ip, 2003). From 1881, with the exhaustion of the gold fields, tough times nationally and anti-Chinese prejudice caused a decline in Chinese immigrant populations (Ip, 2003). In 1881, the first Chinese Immigrants Act was passed restricting the number of Chinese people on every ship to New Zealand. Also, a £10 levy needed to be paid by the Chinese who were on the ship (Roy, 1970). The Act was amended in 1888, which put a more severe restriction on the number of Chinese on each ship, also only certain types of ship could have the authority to transport Chinese people (Roy, 1970). A pattern of legislation that an English education test be passed by would-be immigrants was recommended in 1897 and remained until the mid-twentieth century (Roy, 1970). It was first suggested to limit the entrance of Chinese immigrants and Indian immigrants who were not good English speakers,

while entry remained open to those who came from European countries with English as their first language (Roy, 1970). Chinese immigrants were also accused of harming public welfare in New Zealand, while their accusers had no evidence of them having committed any offence (Roy, 1970). In an article written by W. T. Roy, the statement was,

"The Chinese Immigrants Amendment Act of 1907 prescribed a reading test in English for Chinese. In 1908 a fresh humiliation was imposed on them by a regulation requiring Chinese leaving or entering the country to provide a thumb-print … the Immigration Restriction Amendment Act of 1910 plugged this possible loophole by imposing a bond of £100 on persons of these categories … the Chinese that, if one of them came into this category, he had to post a bond of £200." *--(Roy, 1970, pp. 18-19)*

1.2 Chinese People in New Zealand from The Twentieth Century

As economic purpose was the predominant reason for their migration to a new place, it was found that the economy in New Zealand was able to recover after a long depression at the end of the nineteenth century, which attracted more employers and employees to come to the country and exploit new land in New Zealand (Lane, 1970). In 1920, the Chinese population in New Zealand reached the lowest point of prejudice against Asians (NG Bickleen, 1959; Roy, 1970). In the same year, when the whole world increased condemnation of overt racial prejudice, the discrimination toward Chinese people started to decrease. Between 1921 and 1926, the total population of Asian people in New Zealand increased by 14.4 percent (Taher, 1965). After World War II, although the permit system was still in force, relatively more Chinese were allowed to enter New Zealand (Taher, 1965). After 1930, Chinese people in New Zealand were permitted to bring their children to New Zealand on temporary visas (Ritchie, 1986). In 1947, children and wives of some Chinese residents were granted residencies in New Zealand (NG Bickleen, 1959). Until the year 1952, Chinese people were debarred from having citizenship in New Zealand (NG Bickleen, 1959). The

immigration policy became more open to Asian people as well, which contributed to the expansion of the population of Asian people in New Zealand (Taher, 1965). It was not until 1968, when the Minister of Immigration and officials provided a written statement which pointed out that Asians, particularly Chinese, had assimilated well, that the anti-Asian sentiment in New Zealand had been reduced (Roy, 1970, p. 22).

a) Increasing Importance of Asian People in New Zealand

The population of New Zealand has increased dramatically in recent years, accompanied by the population of immigrants, especially Chinese immigrants. From the late 20th century, the size of the Chinese population in New Zealand surged from 26,616 in 1986 to 81,309 in 1996, which became 2.2% of New Zealand population (Eyou, Adair, & Dixon, 2000). Almost 1 in 4 people living in the Auckland region identified with one or more Asian ethnic groups, 10.5 percent in Wellington, and 6.9 percent in Waikato according to the 2013 New Zealand census (Statistics New Zealand, 2013, May 3). The Chinese ethnic group in New Zealand was reported as the largest Asian ethnic group in 2013 as well, with 36.3 percent of the Asian ethnic group (Statistics New Zealand, 2013, May 3).

Asian ethnic people have had a great contribution to the economy of New Zealand as well. Asian ethnic people in the workforce with at least a part time job occupied 56.94% out of 277,599 of Asian people aged 15 years or above, and Asians who were studying took up 19.21% of the total Asian population in 2006 (Statistics New Zealand, 2006). In the same year, Chinese employees in the labour force occupied 48.61% of the total Chinese population in New Zealand (Statistics New Zealand, 2006). With the addition of those who were self-employed, the number of Chinese people who are in the labour market will be higher (Statistics New Zealand, 2006b). House ownership by Chinese aged 15 years and over

was reported as 121,779, which means twice that number of people, who are either non-Chinese people or Chinese people, became neighbours of Chinese (Statistics New Zealand, 2006). In 2013, 69% of the Chinese ethnic group lived in the Auckland region, 26.6% of the total Chinese population were born in New Zealand and 73.4% were born overseas (Statistics New Zealand, 2013, Augest 19).

In a survey conducted in 2010 asking, "*how much of an impact do you think conflicts, threats, and instability in Asia could have on New Zealand*", 80% of New Zealanders thought it would be some or a significant impact (Butcher, 2010). Asia has been viewed as the second-most important region to New Zealand's future, behind Australia (Brunton, 2016). There were also 75% of New Zealanders who took Asia as the most important region to New Zealand's future in 2015 (Brunton, 2016). However, few New Zealand people self-reported knowing about Asia (37%), with those who live in Wellington and Auckland and those with a higher income being more likely to know about Asia (Brunton, 2016).

b) Increasing Population of Chinese People in New Zealand

In 2014, in one year, a total of 43,085 immigration applications were approved, 7,305 of these came from China (New Zealand Immigration, 2013, September 2). As at the beginning of December 2014, 20,022 Chinese students were reported in New Zealand, which was 27.19% of all international students in New Zealand (New Zealand Immigration, 2015, Augest 2a). There were 19,329 out of 185,939 work visas for Chinese approved in 2014, which was more than 10% of the overall newly permitted work visas (New Zealand Immigration, 2015, Augest 2c). The number of Chinese Visitor Visas that had been approved by the New Zealand Immigration (2015, Augest 2b) in 2014 was 122,446, in comparison to the full amount of visitor visas in that year that was 254,680. China was in the top five long-

term source countries of immigrants between 2001 and 2006 (ENZ, 2015, Augest 6). Chinese also contributed to about 4% of total population in New Zealand in 2013, making Chinese the largest non-European, non-Polynesian minority ethnic group in the country (Ip, 2014, Augest 6). The Chinese ethnic group has already grown to play a crucial part in New Zealand's social, economic, and political world.

1.3 New Zealand Nationality and Ecological Change

The early settlers from European countries were not coming for political independence, but more for an economic pursuit; a way for those who were in the middle class, lower middle class or below, to look for opportunities to alleviate poverty and economic struggle (Beaglehole, 1900, pp. 108-109). With the influence from other British colonies as well as general perceptions in Britain at that time, the early settlers came to New Zealand with the expectation that all the native life, including plants, animals, and people alike, would inevitably be supplanted and displaced (Galbreath, 2002). They were convinced of having higher priority than the indigenous race in general, and in conjunction, European plants and animals were prioritized over native species as well (Galbreath, 2002). For a long time, the displacement and the extinction of the native plants and animals occurred across the progress of human colonization (Galbreath, 2002). Those immigrants were irresponsible and haphazard, so that districts, societies, and individuals acted quite independently, sometimes in opposition, to each other (Thomson, 1922, p. 2). One district imported stoats and weasels in order to cope with the rabbit pest, while another destroyed them as they threatened the total destruction of the native bird life (Thomson, 1922).

Many species were brought in and released to become feral in New Zealand. They were fed with native plants and other food sources. From the 1870s, academics started indicating

their concern about the extinction of native forests or bush and native animals, through the argument New Zealand needed conserve local forest to reduce waste and sustain the timber industry, or to protect bird species to save the characteristics of the country (Galbreath, 2002, p. 37). But it was not until British authorities indicated their concern about the fate of New Zealand, that the idea of conservation and protection of the native species gained more support (Galbreath, 2002). For the colonial purpose, conservation of native flora and fauna were in action from the end of the nineteenth century (Galbreath, 2002).

Conservation of native species started with the protection of tui and kiwi, which were both significant symbols of New Zealand; and soon after, the conservation of native tree species and bush were considered as well. The New Zealand Natives Associations and Scenery Preservation Associations and Beautifying Societies in the 1890s, the New Zealand Forest and Bird Protection Society in 1914, the Forestry League in 1916, the Native Bird Protection Society in 1923, all showed concerns and contributed to the protection of native bush and animals in New Zealand (Galbreath, 2002). Hunting was also regulated by the Animals Protection and Game Act 1921-1922 (Galbreath, 2002). In the year 1987, legal environmental administration, that had been overseen by the Department of Lands and Surveys and parts of the Ministry of Agriculture, both of whose main business was land development, was organized under the leadership of the Department of Conservation to conserve, protect and preserve the natural heritage that gives the country its unique character (Galbreath, 2002).

2 Nature

2.1 Tourism and Wilderness

New Zealand tourism has had a long history. The first tourists to New Zealand were not far behind the European immigrants. They were attracted by seals and whales in the South island, the mountainous landscape of the Southern Alps and Fiord land and by the volcanoes and Maori culture in the North Island (Hall & Kearsley, 2001, p. 13). By the 1860s, sites such as the Pink and White Terraces, Milford Sound and Mount Cook had already become world famous; in addition, New Zealand's reputation in sports fishing was well known by international fishing lovers (Hall & Kearsley, 2001). Also, Maori culture had contributed to the New Zealand tourism industry through the combination of traditional dress, the haka, thermal pools and the traditional foods, which all provided a cultural icon which complemented the natural tourism in New Zealand tourism industries (Hall & Kearsley, 2001). In 1901, New Zealand established the first national tourism office in the world, to regulate the tourism activities, and also to create substantial reserves for scenic preservation (Hall & Kearsley, 2001). The early record indicated that the annual number of international tourists to New Zealand in 1903 was 5,223 and has grown gradually since then (McClure, 2012, July 13). The number of tourists' increased from 8,000 people a year in the 1920s to around 22,000 visitors a year by the advent of World War II (Hall & Kearsley, 2001). Overseas travellers reached a million by the year 1992, with growth rates at 10 percent per year on average (Hall & Kearsley, 2001). Also, with the increased cultural diversity, international visitors who come to New Zealand can experience not only the impressive landscape and scenic beauty, but also the cultural diversity. Numbers of people from Japan, European countries other than Britain, Taiwan, South Korea, and other Southeast Asian countries were

increasing and enjoying the cultural diversity in the 1990s (Hall & Kearsley, 2001). By the 2000s, international tourism had become the country's highest export earner and employer, directly or indirectly, which contributed $18.6 billion to the annual economy, or 9% of gross domestic product (McClure, 2012, July 13). There were 2.4 million international tourists in New Zealand by 2009 (McClure, 2012, July 13). The tourist industry is complex, providing cultural, adventure and nature activities. Extreme activities, such as jet boating and, bungy jumping, have been marketed since the late 1980s and ecotourism was developing at the same time (McClure, 2012, July 13). Whale Watch, dolphins, and other wildlife related activities were encouraged and have achieved success since the 1980s.

Apart from international tourism, domestic travelling also played an essential role in the economy in New Zealand. Domestic travelling in New Zealand includes residents' day trips and an overnight trip for holiday, business, visiting friends and relatives and other reasons within New Zealand. It plays an important role in balancing seasonally and geographic dispersal with tourism in New Zealand, as domestic travelling and international tourism have different peak months (Statistics New Zealand, 2015; Tourism 2025, 2014, March 3). In 2004, 44.1 million domestic trips were recorded being made by New Zealanders, and the number remained high until 2008, reaching 43.4 million trips (Ministry of Business Innovation and Employment, 2009). For the year ended March 2009, the domestic tourism industry contributed $12.4 billion compared with that of international tourism which was $9.3 billion, and $8.06 billion domestic expenditure in 2008 (Ministry of Business Innovation and Employment, 2009). In the report conducted by the organisation Tourism 2025 in 2014, domestic tourism revenue had contributed $14.2 billion compared with that of international tourism which was $9.8 billion (Tourism 2025, 2014, March 3).

All the figures above indicate that tourism is also a vital part of New Zealand's economy. The natural scenery of New Zealand is the main attraction for tourists internationally and domestically.

Outdoor activities are also an important part of the New Zealand public's lifestyle since the 1800s (Reis, 2012; Shaw, Zink, & Lynch, 2014). The New Zealand government also encourages their people to engage in outdoor activities through funding and providing direction for decision making regarding outdoor pursuits (Shaw et al., 2014). Cycling, hiking, mountain biking, fishing and other activities are enjoyed by New Zealanders. The more outdoor activities New Zealanders participate in, the greater the likelihood of them experiencing the effect of possums in wilderness of New Zealand. Hence, their attitudes toward possums would be more complex according to what they experience in New Zealand.

Due to the specific territorial conditions in New Zealand, and the fact that there are no big mammals, the country tries very hard to protect native species and preserve them from being influenced by any other alien species to conserve biological sustainability (Potts, 2009). In some public sites and tourist attractions, visitors are subject to a billboard with information about pests and how to kill them using multiple methods, almost as soon as they walk into the facility (Potts, 2009). In the *Karori Wildlife Sanctuary* in Wellington, they are greeted by the stench of decomposing animals, mainly introduced unwanted animals, before they can choose which way to walk for peace and to enjoy the beautiful scenery of the "pure" country (Potts, 2009). In order to eradicate those pests, toxic substances are dropped purposely on 5% of the total area of New Zealand, which includes some of the tourist destinations (Department of Conservation, 2015, October 14).

2.2 Influences of Possums

Possums were brought in as pioneer settlers of non-native species with early European settlers to New Zealand in the 1830s (Potts, 2009). Most importations were made by the regional acclimatization societies, between 1890 and 1900 (King & Mammal Society. New Zealand, 1990, p. 76). They were first liberated in one area, and then escaped and had spread all over the country by 1893 (Thomson, 1922, p. 29). Possums were found to be a very profitable business that was being protected under legislation in 1911 (Thomson, 1922, p. 30). However, they were also responsible for the damage to fruit, vegetables, grain and grass that farmers and orchardists complained about as early as the 1910s (King & Mammal Society. New Zealand, 1990). The conflict of interests resulted in several changes in legislation toward possums. Protection legislation toward possums lasted a year and was withdrawn after counter-pressure from possum trappers in 1912 (King & Mammal Society. New Zealand, 1990). A year later, further outcry from the societies resulted in an absolute protection in New Zealand in all the bush-covered districts (King & Mammal Society. New Zealand, 1990). Continuous debates lasted until 1919 when a professor officially requested permission to investigate the possum's damage to the forest in New Zealand (King & Mammal Society. New Zealand, 1990). The importation of possums was not stopped until the 1920s when the Department of Internal Affairs restricted the liberation of possums, though locally bred stock was liberated until 1952 (D. Garden, 2005). The legal status of possums has shifted from one of complete protection, through licensed trapping as a resource for fur, to a pest, but one that can provide some resource value[4] (Cowan, 1990).

[4] http://predatorfreenz.org/?s=possums, current policy relating to possums in New Zealand is for it to become predator free;

In New Zealand, possums feature as the number one pest on the pest list needing to be eradicated and there has been research conducted for decades on how to effectively control their population (W. Fraser, 2001; Morris & Weaver, 2003; Weihong & Clout, 2001). However, possums, with big eyes, pointy noses, short limbs, fluffy fur, and clumsy moves, meet the cute features that should make them attractive and cuddled by people, academically called “parenting behaviour” (Milton, 2011). People in Australia pet possums, try to find a way to live with them and are happy to have possums living near (Hill, Carbery, & Deane, 2007). Yet the same species, the same looking and fluffy species in New Zealand were regarded as evil, and alien, and unwanted animals that need to be controlled and eliminated (Milton, 2011). Also, in New Zealand, an immigrant country with people from all over the world living here as well as international tourists coming from other places, people from other countries would have a range of perceptions of possums which differ from New Zealand people; also, they would have their own opinions when seeing the treatment possums received in New Zealand.

The impacts of possums in New Zealand can be categorized into three aspects: impacts on agricultural and horticultural production, impacts on human and animal health, and impacts on the other sectors influencing conservation values (Greer, 2006). As a *herbivorous marsupial*, possums are nourished by the crops and pasture with the particular harm done in areas adjacent to possum habitats (Greer, 2006). They damage most types of fruit, vegetable and flower crops that are planted for commercial purposes (Greer, 2006). Further impacts include the possibility of the reduction of honey production due to lack of flower sources (Greer, 2006). Besides, damaged forests will have the potential to lead to a recession in the tourism industry of New Zealand, because fauna and flora in the country is one of the main attractions for travellers internationally and domestically (Greer, 2006). The impact of

possums on animal health is mainly that they carry and spread Bovine Tuberculosis (TB), a disease detrimental to cattle and deer; as well as human health by damaging the immune system (Morris & Weaver, 2003; Potts, 2009). At the same time, possums are believed responsible for being a vector of other diseases including *Giardia*, *Leptospira balanica* and other parasites and diseases in farm animals (Morris & Weaver, 2003). For other sectors, possums, as the primary vegetation consumer, consume a huge amount of native flora and fauna that diminishes the possibilities of other species accessing food (Greer, 2006).

3 Human Animal Relations

The human animal relations study became an important discipline in the last twenty years in academia, with increased presence of animal advocacy in the world (DeMello, 2012). In a society which lacks living necessities, animals were required to supply meat, wool, or fur to help human survive (DeMello, 2012). The use of animals for humans' physical needs is greater in a harsher climate than it is where climate conditions are suitable for crops which are sufficient for most of food and clothing provision (Phillips et al., 2012). With the abundance of food resources and cloth materials in the last twenty years in many parts of the world, the role of animals has been reconsidered in human society.

From the nineteenth century, scholars started to think about animal rights, whether animals have feelings, and whether it is good to kill animals even if they were raised for consumption purposes (McCance, 2013). Roles of animals in human society have expanded in New Zealand: from being companion animals that are treated as a family member with emotional attachment, to being working dogs that work on farms for herding stock, to helping people with rescuing, searching and policing, and guiding people with special needs, such as blind people (Amiot & Bastian, 2015). Nevertheless, animals like cows, pigs and sheep still can be

seen on people's plates. Animals can also appear as the subject of entertainment sport like fishing, hunting, paua catching, crab catching, and whale watching, particularly in New Zealand.

Attitudes to animals have changed over time. People who have at least one companion animal are reported to behave more against animal abuse (Wager, Owen, & Burke, 2015). To animals with "cute" looks, generally with big eyes, pointy noses, short limbs, and fluffy bodies, humans, especially females, give more love (Milton, 2011). Other positive actions which help protect animal rights were indicated from the establishment of several animal protection groups. Save Animals From Exploitation (SAFE) was founded in 1932 in New Zealand, aimed at making significant improvements to animal welfare though raising awareness and challenging cruel practices (New Zealand Companion Animal Council Inc, 2016b). SPCA New Zealand, the Royal Society for the Prevention of Cruelty to Animals, was formed to protect animals who are sick, injured, lost or abandoned. They are also the only charity with the power to prosecute people under the Animal Welfare Act 1999[5].

3.1 Human Animal Relations Study in China

The concept of animal rights was introduced to China in the early 1990s, but only attracted more public attention from the mid-1990s, when a Chinese translation of Peter Singer's *Animal Liberation* was shown to readers in Mainland China (Li, 2006). Since then, international non-governmental organizations have begun to operate in Mainland China and have played a crucial role in facilitating Chinese intellectual exploration of animal rights and animal welfare (Li, 2006).

[5] http://www.rnzspca.org.nz/about,

Debates on animal rights and welfares in China have been held among academics for years. In 2002, Qiu Renzhong, from China's Academy of Social Sciences (CASS) Institute of Philosophy, published an article that stated that we should not only discuss animal rights and animal welfare but more importantly, work for changes in public attitudes and policies (Li, 2006). Qiu believes that there are compelling reasons for discussing animal rights, the most favourable of which is that public awareness of animal protection consciousness has been rising (Li, 2006). Yet, Zhao Nanyuan, a professor from Tsinghua University, argued that what Qiu has claimed was "*anti-humanity*" and nothing but "*foreign trash*", which is a tool western countries use to dominate non-western civilizations (Li, 2006). Zhao argued that animals have no emotions or self-consciousness so that they were not subjects of rights (Li, 2006). Academics supporting Professor Qiu suggested that China should have acts regarding anti-cruelty to animals through claiming animals have emotions and feelings. They argue that China has a long tradition of kindness to animals, as Buddhism and Taoism encourage people to treat animals as equal to human beings; Confucianism recommends people love animals and be in harmony with the whole world including animals (莽萍, 2002). Professor Zhao's advocates claimed that the establishment of animal rights legislation is inhumane, it would mean the sacrifice of human welfare and that it would only be suitable when social and economic productivity have reached a certain level like in Western countries (Li, 2006). Professor Zu Shuxian from Anhui Medical University argued against Zhao's theory by referring to the statement of Albert Einstein; "*to free ourselves by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty*", animals have the same common faculties and similar mental degrees as human beings, that they have feelings and emotions (Li, 2006, p. 114). Zu also suggested that we need to be more sympathetic to animals and treat them fairly according to Kant's theory (Li, 2006).

Animal welfare has also received media attention in recent years. In 2002, an international forum in Beijing and an animal protection and education conference in Hefei were organized in China (Li, 2006). The 19th International Zoological Conference 2004 and 2005 Compassion In World Farming (CIWF) Trust and the Royal Society for the Prevention of Cruelty to Animals (RSPCA) were all held in China in relation to animal rights and welfare (Li, 2006). Also, China has successfully joined the World Trade Organization, and hosted the Summer Olympic Games in 2008; all of these encouraged the establishment of an animal welfare regulation which is more aligned to international perceptions of what is appropriate (Wei, 2006).

There were no policies or regulations in China that had clearly stated animal rights articles until 1997 (Li, 2006). Before that, regulations regarding animal welfare were either vague or not policed at all. In the document about farming bears for bile, the cage size, duration of time in the cage, veterinarian care, the method of bile extraction and the condition of bears suitable for extraction are clearly stated (Li, 2006). In 2012 the Third Chinese Veterinary Conference, a forum on animal welfare development was included on the schedule, being involved explicitly in a national conference for the first time (The Chinese Veterinary Conference, 2012, May 12). That indicated a growing recognition of animal welfare among Chinese academics and public (Meng et al., 2012).

With the contribution of international and domestic organisations, discussions in animal welfare and animal rights by the public and government have been progressing rapidly, with similar discussions to those that have occurred in other countries (Lu, Bayne, & Wang, 2013). The basic animal welfare concepts have been introduced to the Chinese public, but efforts in establishing a more applicable animal welfare legislation are still needed, especially under the current social, political, economic, and cultural environment in China (Lu et al., 2013).

3.2 New Zealand Attitude toward Possums

As mentioned above, possums were imported from Australia to New Zealand. As a consequence, Australians treat possums as a native species and part of their eco-system; in comparison New Zealanders regard possums as an alien species that needs to be eliminated (Milton, 2011). Australia has possum issues as well. However, the perceptions of Australians to possums are different to those of New Zealanders. Some Australians regard possums as cute animals and are happy to have them as pets, while other Australians think possums are a nuisance that needs to be relocated away from human properties (Hill et al., 2007). Conversely, New Zealand, as a country economically relying on primary industry and the beautiful landscape, will be influenced by possum's presence more than Australia. As a result, Australian websites and public information leaflets educate people about how to live with possums, while media in New Zealand give the public information on how to get rid of them (Milton, 2011).

In New Zealand, possums are hazardous to native fauna and flora, primary industry and human health, making New Zealanders have negative attitudes toward them. It is one of the four main pests defined by the New Zealand government (Department of Conservation). Public attitudes in New Zealand toward possums are very negative. They have focused on possum control methods for decades, such as hunting, trapping, poisoning and fertility control (Fitzgerald et al., 1996; Greer, 2006; Isern, 2002; Kerry, 2012, Feburary 5; Milton, 2011; Potts, 2009; Powlesland et al., 1999; Wilkinson & Fitzgerald, 2006). Recent surveys on attitudes toward possums showed that most New Zealanders have a negative impression of possums and 60% of participants in the surveys reported having seen possums do damage in native bush; 95% of participants agreed with the statement that "possums are a threat to

NZ's native bush"; while only 10% agreed with the statement that "possums are basically harmless" (Fitzgerald et al., 1996; W. Fraser, 2001). The government encourages public and foreign travellers to buy possum products to help control the possum population (Potts, 2009).

4 Previous Studies

The New Zealand public is knowledgeable about the possum issue in the country, particularly their effect on the native fauna and flora. There are academics conducting research on how to eradicate possums and how to control the possum population. To control the population of possums, the New Zealand government has spent a huge amount of money and efforts. In 1994, the New Zealand Official Year Book noted that annual costs for possum control, possum damage, and possum research were estimated at around $54 million (Greer, 2006). The figure had increased up to $117.5 million by the year 2000 (Parliamentary Library, 2000). In 2006, it was reported that government agencies spent around $111 million on possum control, and an additional $35 million due to possum damage (Hutching, 2015, September 25).

The report carried out by Wilkinson and Fitzgerald (2006) investigated public attitude toward possums' fertility control and the genetic engineering in New Zealand. They found the public were generally happier to accept fertility control rather than the traditional trapping or shooting; or the least acceptable, poisoning like 1080 (Wilkinson & Fitzgerald, 2006). However, when talking about using genetic engineering in population control of possums, few participants responded with positive acceptance, most of them were concerned about the further danger to the environment in New Zealand (Wilkinson & Fitzgerald, 2006).

In 2007, Australian scholars surveyed the general attitude of the Australian public to possums in their urban area (Hill et al., 2007). In urban Sydney, possums were regarded as native animals and comments were conflicting. Some people viewed possums as the image of cuteness and fluffiness and showed willingness for co-living with them and offered them nesting places and food sources. On the other side, there were members of the public who had suffered from the possums' damage to their houses, and were annoyed with possums' noises and nesting on their roofs. Those people who experienced houses damaged by possums have a similar attitude to that of New Zealanders (Hill et al., 2007). Most of the Australian participants indicated their willingness to learn more about possums. Admittedly, New Zealand is rather different from Australia, not only in territory area and human population, but also in the extent of urbanization. Primary industry is still the core economic industry of New Zealand while the Australian economy is less reliant on that. Also, there are different perceptions toward possums: Australian people regard possums as an indigenous animal while New Zealand people see possums as an alien and un-wanted species damaging their host's animals and plants.

Milton (2011) suggested various reasons for different attitudes toward possums in Australia and in New Zealand. She demonstrated that possums have similar behaviours in New Zealand and in Australia while being treated differently for four main reasons. Firstly, possums fit into the cuteness appeal where they are viewed as cute in both New Zealand and Australia (Yeung & English, 2012, pp. 82-90). However, the anti-possums discourse in New Zealand has overridden the cuteness looking of possums by blaming them for being a disease carrier and unwanted aliens (Milton, 2011). Secondly, possums are carriers of disease that harm the primary industry, which is one of the main economic resources of New Zealand, and then possibly spread to humans. The author advised that this may not be

the main reason of dislike for possums in the country, as the attempt to eradicate possums was started before the discovery that they carry Tb, but it does make the anti-possums discourse in New Zealand easier and with fewer obstacles (Milton, 2011). Even though they do the same things in Australia as they do in New Zealand, the comparatively integrated ecosystem in Australia has more resistance than that in New Zealand. Thirdly, possums are not native species in New Zealand and are harmful to their flora and fauna. Last, children in New Zealand have grown up within an environment where possums are representatives of evil and badness, which helped build up their anti-possum attitudes as they grow up (Milton, 2011).

In 2008, scholars suggested that the amount of meat consumption in the dietary structure has an impact on the attitude of New Zealanders toward animals to some extent (Potts & White, 2008). Also, they mentioned that animal farming in New Zealand is the backbone of the economy, and the public in the country tend to prioritize the farm industry more than any others. Therefore, when possums are harmful to the farming industry and damage the basis of the monetary sources of the country, it then became reasonable that New Zealanders would not like possums.

Potts (2009) argued that, possums were imported and relocated by human beings from Australia. When they were found to be detrimental both to the primary industry in the country and to the health of the public, they were regarded as an un-wanted alien and eradicated by all ways; shooting, trapping, and poisoning. School children were educated about the hazards of possums to this country, and in a small rural school they were encouraged by dressing dead possums (Kerry, 2012, Feburary 5). They have been treated inhumanely, and been exploited without empathy for being brought into a country they did

not belong. Professor Potts raised concern about the treatment of possums and the purposes and consequences of further human activities.

Nicolas Holm from Massey University suggested that, as anti-possums attitudes were almost compulsory for New Zealanders, possums were not regarded as being animals in New Zealand (Holm, 2015). He mentioned that those people who are the most environmentalist and conservationist are also those who have the most anti-possums attitudes (Holm, 2015). He also argued that possums, are a sacrifice because they sit at the crossroads of postcolonial and environmental ideology, they were blamed for causing the destruction of native wildlife as a distraction from the environmental destruction caused by colonists themselves. He thus suggested that "*possum-hatred acts to resolve the contradiction between the vision of a pristine natural environment that informs Aotearoa-New Zealand's wide range of conservation practices, from species restoration to border security, and the continued existence of the settler state" (Holm, 2015, p. 31).*

Also, in the year 2015, academics supported the anti-anti-possums discourse by pointing out that the print media in New Zealand does not have an objective stance to introduced possums, but operates through vague conversations or avoiding talking about the moral debate of killing them (McCrow-Young, Linné, & Potts, 2015). They also expressed the opinion that, print media in New Zealand helped demonize possums and marginalized them (McCrow-Young et al., 2015). In addition, killing possums competitions and dressing dead possums competitions encouraged the killing and making fun of dead possums, while showing less empathy to them, when they were supposed to be regarded as a part of the ecosystem or environment in all the countries, or, at least an animal species (McCrow-Young et al., 2015).

Previous studies mentioned either anti-possum discourse through the ecological, environmental, and economic consequences; or possum advocates arguing the reasons for possums being in New Zealand, the animal welfare perspective, and humane ways of treating animals. This study is focused on immigration, the impact of cultural interactions on human-animal studies in New Zealand, or in detail, culture differences between Chinese immigrants and New Zealand people relating to attitudes to possums.

5 Conclusions

The issue of possums has been researched in New Zealand for over eight decades. The New Zealand Government has also devoted massive efforts in possum controls, as well as funding scientific researches, researching in possum control methods, possum breeding patterns, and public perceptions toward possums (Fitzgerald et al., 1996; Parliamentary Library, 2000; Potts, 2009; Wilkinson & Fitzgerald, 2006). Possum control methods cover poisoning, trapping, biological control and in future may include genetic engineering. Some success has been achieved but there has also been some controversy around it. Yet possum control still is an ongoing programme that New Zealand needs to conduct.

New Zealand is an immigrant country that people from all over the world have relocated to and been residing in. Those people, fostered by their cultural backgrounds and understandings of the human animal studies, may have brought in various perspectives toward possum controls in New Zealand. Hence, how the current possum control methods work for immigrants and how immigrants think about possums in New Zealand, will contribute to understanding the acceptance of possum controls in this country. Particularly as there are multi ethnicities in New Zealand, how people from different ethnicities view the

possum issue differently will provide a better understanding of how the current policy works for the country and how we could better establish the policy.

Asians, with increasing numbers of immigrants, have become the second largest non-European ethnicity, just behind European, and have become an important part in New Zealand society. Hence, it is important to view how Asian people, especially Chinese people, view possums and possum control in New Zealand. Particularly, how Chinese people view nature and the environment will help the making and execution of policy in New Zealand. This study will try to investigate how much knowledge Chinese people have about possums, how they view them and how their attitudes toward possums have changed over time. Thus, this study will contribute to future policy on the control of the possum population

Chapter Three: Methodology and Methods

1 Introduction

This section explores the approaches the researcher used in discovering the cultural backgrounds of Chinese people and New Zealand people in dealing with animals, particularly possum issues in New Zealand. New Zealand people treat possums as evil and want them to be eliminated and Chinese people may barely know they exist. Through a combination of quantitative research methods and semi-structured interviews, an overview of perceptions of Chinese people toward possums and their knowledge basis regarding animal and environmental issues, was developed. To achieve a representative dataset for Chinese people in New Zealand, several online platforms were approached for delivery of the survey. These included Facebook personal page distribution of the questionnaire, Facebook advertisement creation for the survey, and animal welfare organizations in New Zealand with different focuses were approached. Because only some of the organizations had available platforms to help the researcher distribute the questionnaire, the research has been developed consistently towards a stronger focus on general environmental attitudes. With all the means used, the investigation of perspectives of general Chinese people in New Zealand toward animals and environment, will help interpret the cultural and societal differences from those of New Zealand people. Additionally, secondary data from previous national spectrum surveys were used as supplementary sources, which contribute to the understanding of data collected from the online questionnaire and the perspectives of the interviewees.

The next sections of this chapter will display in detail what the researcher has done, who or what organizations have contributed to the research, how the researcher achieved the goal and what were the outcomes. Detailed interpretations of processes of participants recruited in the research, methodology adopted and discussion of the methods will be generated in the process of unfolding the whole project in the following parts.

2 Methodology

With all the information explained in Chapter Two, combined with researcher's personal experience, this study aimed at exploring the perceptions toward possums of Chinese people in New Zealand, and that of New Zealanders, through comparison and contrast; and clarifying the orientations of these attitudes. Due to each group having the same cultural background and educational system, and experiencing the similar societal system for people from each country, the assumptions were that although the perceptions of each individual toward animals are different, roughly generalised perceptions toward animals of people from China would have differences from those of New Zealand people (Glass, Bengtson, & Dunham, 1986).

First, methods for exploring ethnic subsamples were explored.

2.1 Previous National Wide Researches in New Zealand

The Ministry of Primary Industry (formerly the Ministry of Agriculture and Forestry) commissioned nationwide research, which detailed ethnicity groups into Asian, New Zealand Maori, New Zealand European or Pakeha, Pacific Islander, Indian, Other European, and other. They achieved success in using quantitative research methods nationwide by using the platform Smile City. Smile City was a community of New Zealand residents who earn rewards

through doing online questionnaires. People can earn vouchers that can be used in supermarkets, or some Fly Buy points, or real cash. The researcher attempted to contact people who operate the website to find out the cost of distribution of an online survey. Ideally, if it would be affordable, Smile City would be a perfect way of getting people involved in. Yet, after having forwarded her request twice, the researcher received the answer; a minimum 500 responses and NZ$5 per person. That was impossible for the researcher to afford. Auckland University of Technology (AUT) have conducted nationwide surveys in investigating the usage of, and attitudes towards internet from 2007, every second year (Crothers, Smith, Urale, & Bell, 2016). Based on telephone and internet surveys, Phoenix Research Ltd[6] and Buzz Channel[7] helped in carrying out the survey. With their help, more than one thousand participants filled out the questionnaire and the results can be tracked over years. As the researcher neither has sufficient funds for doing nationwide research using Smile City, nor has strong commercial support from companies for doing a big survey such as Buzz Channel, the project the researcher conducted was rather exploratory. An alternative research approach had to be explored which had enough representation to validate the whole project. The high internet use measured by the AUT survey suggested that a different form of internet survey might still be possible (Crothers et al., 2016).

2.2 Previous Researches in New Zealand in Investigating Chinese People's Perceptions

Studies of Chinese people in New Zealand have been analysed and conducted in multiple disciplines. Interviews were used as the main tool for analysing Chinese people's behaviour or attitudes (Govender & Machet, 2012; Tse, Rossen, & Hoque, 2012; Zhang, Gage, & Barnett, 2013). With snowball sampling, using structured or semi-structured interview

[6] http://www.phoenix.co.nz/, Phoenix Research Ltd;
[7] http://www.buzzchannel.co.nz/, company charge for online polling;

questionnaires, interviews were transcribed and analysed to generate a conclusion of the study.

The quantitative research method used to investigate Chinese people's attitudes or behaviours in New Zealand was the least considered. Yang, Ryan, and Zhang (2012) using the quantitative research method, investigated the possible reactions of Chinese respondents to requests to complete questionnaires in China face to face, where the researchers were from various countries. They found that, among those people who were willing to participate in the survey for different reasons, they expressed less favour toward signing the requested consent form. The authors interpreted the issue through traditional Chinese culture, where a trust based relationship between the respondents and the researchers needed to be built up prior to the survey (Yang et al., 2012). In addition, the researcher believed that the respondents were educated to obey and respect the official or government paper or statements, so that they were sufficiently concerned about the future consequences of the completion of the consent form, that they might express the answer they think 'right', rather than the answer they really believe in.

Quantitative research methods were adopted and appropriate response rates were received when incentives to participate occurred (Gorton, Mhurchu, Chen, & Dixon, 2009). A study conducted by Gorton et al. (2009) which investigate the use, understanding and preferences among ethnically diverse shoppers in New Zealand had a high response rate where there was an incentive for people to participate in the survey. Or, quantitative research methods could be conducted when there are helps from some organizations which targeted specific groups of Chinese people, such as the educational Institutions; or through posting the electronic copy to all the Chinese students in their database; or with the help from a

company that arranged tours for Chinese overseas visitors and approached their visitors during their last night in New Zealand (Ryan & Mo, 2002; Zhiheng Zhang & Brunton, 2007). Another branch of research method targeting Chinese people in New Zealand was self-reported surveys. Self-reported surveys were applicable when the eligible participants expressed strong willingness to talk, to have a say in the research area, where either the research topic was strongly connected with their daily life, or would help better their life conditions (Yeung & English, 2012). Alternatively, sound response rates would be achieved when the participants were involved from the researchers' personal network, such as friends, colleagues or people from ethnic community organizations (Yeung & English, 2012). But most importantly, a small sample size was required by the researchers conducting a self-reported survey. In Yeung and English's study, seventy-nine Chinese people were recruited.

2.3 Rationality of The Research Methods

Targeted research sample was still in a massive population. No single Chinese can claim to be sufficiently representative to say anything on behalf of the very big Chinese community in New Zealand because of the custom differences between different places in China where they came from, and the big variety in other characteristics of the population of Chinese people in New Zealand. Qualitative interviews may work in a small size sample group, when the interviewees are strongly representative of the whole group, as discussed in previous section (Chapter 3: 2.2). Yet, for this study, as a big sample size was required, using qualitative interviews solely would not be sufficient or valid. The more participants involved in the study, the more participants from different locations recruited into the study, the more significance the results of the study have. Therefore, the next stage I needed to determine was how to contact as many participants, from as broad territory locations as I

could. Thinking about the diverse sample I needed to achieve, a quantitative research method appeared to be an appropriate way to achieve the goal.

Traditional quantitative research methods using paper and pen based surveys require sufficient funding support as well as a long research period, or a group of researchers devoted to the project (Van Heerden, Norris, Tollman, & Richter, 2014; Yeung & English, 2012). That approach exploring the potential participants also requires other resources, with a list of addresses which includes everyone living in New Zealand, through which to approach people by posting out questionnaires with paid post-back envelops. As a Masters student with limited funds, the postage fees and printing costs are unaffordable, particularly when a massive number of respondents is required, not to mention finding out the addresses for all the potential participants in New Zealand. Besides, there was no list with demographic status of people living in New Zealand with their full detailed ethnicities. Therefore the paper and pen based method was taken out of consideration.

Some researchers collect data through emailing out the questionnaire in a Word file to targeted participants, which was not possible for this study, because there was no email list to trace every person in New Zealand (Bryman, 2016, p. 229). Approaching only people whose email addresses can be found out through any single path would make the result of the study insufficient, because each way of gathering email addresses would have its own purposes which leads to all the people on the same email list having a similar background.

Telephone surveys too had less feasibility for several reasons: First, there was no list of telephone numbers for everyone in New Zealand which can be used to contact each person. Secondly, with the popularity of Show Caller ID service, increasingly more people knowing

about the function on cell phones to hide caller ID[8], would cause people to be suspicious when there was no caller ID, or an uncommon caller ID appeared, particularly when telephone surveys have been broadly used by industries as a marketing tool and for public opinion polling (Kempf & Remington, 2007). Also, cell phones have the potential for contacting telephone survey respondents, but, mobile numbers are not recorded for everyone in New Zealand, not to mention some people may have multiple mobile numbers (Kempf & Remington, 2007; Lavrakas, 1993). In addition, with cell phones becoming more and more popular these days, some people may not have a landline number at all (Dunbar, 2013, June 6). Approaching participants through landline numbers, if any list of landline numbers can be found, would be biased, because people aged over 20 years would be more likely to be out of home in the day time, and few willing to be patient in the night time or during weekends to do a questionnaire. Only approaching people who had landline numbers would lessen the response rate and bias the result as well. Until now, the research methods seemed to reach a dead end, and no single research method could solve the research problems sufficiently. How to make sure a broad range of the public could address the research topics without funding from other organizations, then became a challenging part of study.

Online questionnaire distribution appealed as an alternative. Though still relatively new to researchers, it has been identified as having several benefits (Lefever, Dal, & Matthiasdottir, 2007). First of all, unlike a traditional paper and pen based survey, the online questionnaire was less time consuming and less costly (Bryman, 2016, p. 235). Questionnaires can be posted online in seconds, and ready to be read by thousands of people. As long as targeted

[8] https://www.google.co.nz/#newwindow=1&q=show+caller+id, multiple results on Google, informing how to hide, or un-hide caller ID

participants have internet access, they can click on the link and start doing the survey without printing it out, and answering by simply clicking on the buttons, which would potentially lessen the response time for each participant (Bryman, 2016, p. 235). With the popularity of the smart phone industry, mobile phones can be used as a platform for self-administered questionnaires, people can simply fill out the questionnaire on their bus trip home, or by using segmented time (Bryman, 2016, p. 231). In New Zealand, almost everyone under forty is online, and approximately 70% of those users access internet from a hand-held mobile device such as a smartphone or a tablet (Gibson, Miller, Smith, Bell, & Crothers, 2013). The number has increased in the latest report in 2015, where survey results indicated 95% of internet users surf or browse the web or 85% of them visit social networking sites (Crothers et al., 2016). Eighty-one percent of internet users surfed the web daily for entertainment purposes, and 66% visited social network sites daily (Crothers et al., 2016). The main activities on social networking sites such as Facebook, YouTube, include contents such as posting comments on messages or pictures, photos or videos (Crothers et al., 2016). All those scientific evidences contribute to the possibility of distributing an online questionnaire in New Zealand through an internet browser or smart phone platforms.

A large, diverse and global population can all have access to one online questionnaire, with the potential of a huge amount of data being collected. People can be approached easily through an online link no matter where or who they are. Further, even though all the participants of the online survey are self-selected, online surveys can be quota sampled as well, and setup criteria for participants involved in the study can be met automatically. Moreover, the online questionnaire was normally based on software that can generate data to be analysed automatically which saves time when putting in raw data as well as typo errors if putting data in manually (Lefever et al., 2007). In addition, participants of online

questionnaires are all self-selected, so that genuine willingness of the participants being involved in the survey can be guaranteed. Also, they can decide when and where they should click on the survey and start doing it.

For this study, the online questionnaire was adopted to approach as many potential participants as possible, to be able to achieve a manageable number of respondents. To balance the proportion of participants from China with people from New Zealand, links to the questionnaire were posted onto two websites, Facebook and Skykiwi. As 58.8% of New Zealanders aged 18 or above in 2011 were reported having a profile on Facebook, it was a great platform to put on the survey link so that everyone can see it online.(Krynen, Rapson, & Greaves, 2011). Skykiwi was the largest Chinese website in New Zealand introducing information on culture and lifestyle to the Chinese community with over 45,000 unique monthly IP visits everyday (Skykiwi, 2009, Augest 19). Sub-sections were available to Chinese people in different locations, Auckland, Wellington, Christchurch, and mid-east North Island, Otago and other areas, to provide particular regional information. This meant Skykiwi could be used as a way of approaching Chinese people in New Zealand and investigating their opinions though the survey link.

However, although the online questionnaire has been introduced to western research, only Asian people have been investigated as a whole group. No studies had targeted the Chinese ethnic group before, so that there were no previous studies the researcher could refer to (Bainbridge & Carbonaro, 2000; Comley, 2000; Ilieva, Baron, & Healey, 2002). The main challenges to the researcher were the response rate and the characteristics of the participants approached. Without a proper data support, the whole study would become a construction without a proper foundation, that had a hollow, biased sample. We have

discussed in previous paragraphs, that facing to a big population of the targeted participants, a single research method may be not sufficiently representative and valid. Hence, as complementary data, unstructured interviews were prepared, contacting Chinese people in New Zealand working in a relevant academic area, to offer their point of view regarding the research topic. Those people were all originally from China, experienced or experiencing the cultural interactions, and had their insights into the research topic from their professional point of view, which was either popular culture or pest control science.

Also, to enhance the validity of data collected, as well as ensure the reliability of the final results of the study, multiple research methods were adopted in an attempt to achieve a proper interpretation for the research questions. Apart from the quantitative online survey and unstructured interviews, datasets of 2015 Survey of New Zealanders, the World Values Survey, as well as surveys in the environment topic of the ISSP (International Society Survey Programme) were also gathered with a broader focus for further comparison with the data the researcher collected, and reanalysis.

Mixed research methods required weighing each of the methods carefully, as either all methods should have the same weight so that they are equally important in the research, or one method should have priority in terms of the research questions (Bryman, 2016, p. 638). In this study, the online survey has been given the top priority to investigate the general perceptions of Chinese people and New Zealand people, and the secondary data and qualitative interviews have been used as an explanatory tool in helping interpret the data the researcher collected.

2.4 Concept of Ethnicity in The Study

So far, the research methods have been set up. Now we need to discuss the concepts which frequently appeared in the research, Chinese and New Zealand people. When talking about Chinese People, some researchers referred exclusively to mainland Chinese, Hong Kong Chinese, Taiwanese, and Macao Chinese, while some included Singapore and Malaysia; some even involved overseas Chinese living in south-east Asia, America and Europe (Harding, 1993). The 'Chinese' focused on in this research, were exclusively those people who came from mainland China and were living in New Zealand in the research timeframe.

According to the data collected and summarized in 2006 by Statistics New Zealand, 62.29% of Chinese people in New Zealand were aged between 20 and 50 years, and 64.64% out of this group had stayed in this country for more than five years (Statistics New Zealand, 2006). The report suggested that this age group had high representation for research analysing social and cultural interactions between Chinese and Non-Chinese people within New Zealand. Also, the age group 20-50, held a relatively higher educational level, house ownership rate and employment rate that made them have more connections with other people, hence they were more likely to interact with Non-Chinese people in New Zealand (Statistics New Zealand, 2006). Besides, inter-marriages and inter-ethnic friendships were practised mainly in this age group and contributed to the feasibility of the study in a broader way. In this study, the age group of all the Chinese people was selected as between 20 to 50 years old.

Noticeably, the participants in the research all self-selected their ethnicity, so that the Mainland Chinese mentioned in the research were all people who self-selected as Mainland Chinese, and included second generation as well as first generation immigrants in New

Zealand. Here, to be representative enough of having at least some culture interactions with New Zealand people, the Chinese involved in the study was required to have stayed in New Zealand for at least one year. The study will only involve Chinese people who have been in New Zealand for over one year because there are Chinese travellers and working holiday visa holders whose visa length is one-year maximum until they are granted to another visa type. Those people who come to New Zealand for visiting will not experience cultural interactions as much as those people who have been here for a longer time, even though new-comers would more easily demonstrate the difference of their home country and the host country.

As a result, Chinese participants involved in this study were targeted at those aged between 20 to 50 years old, have been in New Zealand for over a year, and were in New Zealand during the research period. Similarly, the New Zealand people who appeared in this research were those participants who self-selected as Non-Mainland Chinese people. Those people included New Zealand Maori, New Zealand European or Pakeha, Pacific Island, Other European and other ethnic groups. They were also required to have stayed in New Zealand for over one year and aged between 20 and 50 years old. They were expected to have perceptions toward possums and nature in New Zealand that can be clarified according to their ethnic groups.

3 Quantitative Survey

Some of the questions in the survey are referred from previous nationwide surveys, and a study the researcher has done before, which was tested on students in Lincoln University. In addition, based on the cultural background of the researcher being a Chinese, several questions particularly focusing on Chinese people were designed specifically. Questions asking the priority of environment or economic growth were referred from the Survey of

New Zealanders, and the confidence questions about different information sources such as government, press, and universities were referred from the World Value Survey. The purposes of the referrals were for comparing the data collected by the research with the secondary data from the previous nationwide surveys, to see if there were any differences, or similarities. This meant the re-analysis of the secondary data may help in building up the researcher's own academic knowledge.

3.1 Sampling Technique

With the approval of the Human Ethics Committee of the University of Canterbury, the study attempted to compare the perceptions toward possums between mainland Chinese people and New Zealand people. This meant that in the online questionnaire collection period, people in New Zealand active on Facebook and Skykiwi during the data collection period were targeted. The online link to the questionnaire was delivered to staff of the Department of Conservation (DoC) as well, via their Animal Pests email list, to all DoC staff nationally working with animal pests as well as some external people, who volunteered or expressed interested in DoC's work. This survey of DoC staff was not originally planned, but was carried out in response to problems with the online survey described below. Because of these problems, there was a second Facebook survey. To supplement the number of Chinese participants in the questionnaire, an online Facebook advertisement was posted to gather data. The researcher created a new public page as the requirement of the Facebook advertisement group, targeting all the people who speak English and Chinese languages in New Zealand during the data collection period.

The online survey was conducted in four parts. An online link to the questionnaire was posted on to the researcher's Facebook page between 2nd of March 2016 and 14th of May

2016, targeting the public in New Zealand in the data collection period. An online link was posted to all the Chinese people in New Zealand between 2nd of March 2016 and 14th of May 2016, who were active on online Skykiwi during the data collection timeframe. An online survey to members of the Department of Conservation was carried out between 12th of April 2016 and 4th of May 2016. There was a second Facebook survey with a different entry point; an advertised survey was conducted from 21st of June 2016 to 28th of June 2016, targeting Chinese people on Facebook who were in New Zealand during the research timeframe.

Most of the New Zealand people who were over 20 years of age had a Facebook ID; also Facebook was not ethnicity exclusive, so that Chinese people who met the criteria would be included as well (Krynen et al., 2011). But through the link posted onto Skykiwi, the website targeting Chinese people with only one brief introduction page in English and in Chinese, only Chinese people, or those who can read Chinese well, were approached. The online questionnaire was delivered to staff and external people of some DoC staff as well, in order to have their view on the topic included in the research. In addition, to expand the sample size the research collected, DoC people's contribution would be a big help. The fourth part of the online questionnaire distribution period was the online Facebook advertisement period, whose participants were estimated as Chinese people aged over 20 in New Zealand being active online Facebook during the data collection period.

In terms of the nature of the online survey, participants would easily access the researcher's profile, to know about the researcher and decrease the resistance to participation. To secure the researcher, little privacy information was posted on Facebook; working place and the personal status were blocked to non-friends of the researcher, so that only un-blocked information, such as shared videos and websites could been seen by strangers. The

Facebook questionnaire would allow hard-to-reach people and people less -interested in the topic to have access to the research and make them more likely to be involved in the questionnaire through a brief introduction to the survey or an attractive picture on the front of the survey (Baltar & Brunet, 2012). The average friend number of Facebook users was recorded as 338, with the median number as 200 (Smith., 2014, February 3). The researcher had 48 friends active on Facebook, and most of them had more than 50 friends, some of them had more than 200 friends. Within those numbers of friends, people from other countries who had never been to New Zealand were included, as well as some public pages. Those people who had not been to New Zealand before and were not in New Zealand at the research time should be excluded from the research. The questionnaire was posted on the researcher's personal Facebook page and then distributed by the researchers' friends. Then the researcher's friends distributed the survey to their friends. This method was similar to the snowball research method. This snowball like method (De Vaus, 2002) could eventually make most people in New Zealand have access to the questionnaire if people passed on the link to their friends in successive waves. In addition, regular reposting of links onto the Facebook page was conducted, as information updates on Facebook may be so fast that new links can bury the research link in a minute.

On the other hand, through Skykiwi, Chinese people in New Zealand were involved in the questionnaire broadly, as there was a large number of Chinese people who would access Skykiwi at least once a week. In addition, to avoid the geographical area bias, links to the survey were posted on Skykiwi in different sections in various large areas in New Zealand: Auckland area, Mideast of the North Island, southwest of the North Island, the Canterbury area and the Otago area. Hence, Chinese people in New Zealand from all the areas had a similar possibility of getting involved in the survey. The link to survey was posted on to each

section every day, to decrease the opportunity that the link would be missed by occasional un-attendance of the potential participants.

3.2 Trial of The Questionnaire

To generate the final questionnaire, three rounds of questionnaire pilot interviews were tested with both Chinese people and New Zealand people. The purposes of the pilots were not to collect data, but to make sure of the compatibility of the questions with what the researcher wanted to find out, "*Focus on questions, not answers*" (Willis, 2005, p. 142). The questionnaire was also translated into a Chinese version by the researcher, and was tested during the first round of the pilot to Chinese people in the alignment of the Chinese version with English version. As for the translation, not only should the question have same meaning as the original, but also the new translated sentence(s) should make sense. The first draft of the questionnaire was in English and tested on four participants: a young New Zealand female, a mid-aged New Zealand male, and two Chinese males, mainly focusing on the questionnaire itself. The researcher tried to approach participants around a Mall located in the northwest of Christchurch City in the daytime at first, but found it hard to stop people walking through the Mall, with most of them too busy to stop by and talk for some time. Then, the researcher went to Hagley Park in the City Centre of Christchurch, the largest city in the South Island of New Zealand. There, the researcher found four participants willing to help test the questionnaire. All the four participants were read a script of the purpose of the pilot in advance. Here, the script was aiming at conveying orally to all the participants several key points in the interview. Detailed scripts quoted from *Cognitive Interviewing,* (Willis) as below:

> *"Thanks for coming here today to help us test out our survey questions. At this point, we are not collecting information about you. Instead, we're first trying out our questions on a few people such as you, so that we can improve them. I will read you the questions, and I'd like you to answer them. However, I'd also like to hear about what you're thinking. Please try to think aloud—just tell me everything that comes to mind, whether it seems important or not. I'll also be asking you about how you come up with your answers and how you're interpreting the questions, and I'll take lots of notes. If any question seems unclear, is hard to answer, or doesn't make sense, please tell me that—don't be shy. We'll just take our time and get as far as we can in an hour. Do you have any questions before we start?"* (Willis, 2005, p. 142)

The pilot the researcher conducted was a short one, compared with that of a qualitative interview, 30 minutes rather than "*an hour*" as in Willis' quotation. In the pilot interviews, the four participants were encouraged to think about the goal of finding problems rather than data collection, think aloud, and encouraged to feel uninhibited in expressing difficulties (Willis, 2005). With the advice from all the four participants for the first round pilots, revised questionnaires were tested with two friends of the researcher a week later, for further testing the questions as well as timing the questionnaire, also with the purpose of looking into the translation of the questionnaire. To decrease misunderstandings of the questions, and also make more precise the meanings they delivered, the questionnaire was edited again after the second round of piloting. Potential misleading words and sentences were edited to a clearer expression.

The finalised questionnaire was tested on cell phone and computer platforms to visualise the questionnaire layout with the mobile phone screen and computer screen. For some display problems on cell phones as well as on computer screens, formats of questions were altered accordingly. One point that frustrated the researcher was that displays of the questionnaire on different cell phones were different, in terms of the screen size of each phone is different, and the widths of the display. It may look good on some phones while not on others, when the questions are displayed partially, and required to either swipe or move to the remaining part. There was no one way to solve the display problem without

sacrificing the questions. In the end, some questions were too wide for most of mobile phone screens, and were split into two questions. With all the preparations, the questionnaire was active online on Facebook and Skykiwi on 2nd of March 2016.

3.3 Online Questionnaire Distribution(OQG)

The online survey avoided the possibility of identifying any participants until they finished and submitted the survey. Hence, no participants could be categorized into any group before or during the survey as could happen in traditional paper and pen based one. Data of people who did not meet the participants' selection criteria was still recorded, yet excluded during the data analysis.

The online questionnaire distribution was generated from 2nd of March 2016 to 14th of May, 2016, through online Facebook and Skykiwi. An overall of 65 responses were received, 36 of them completed the questionnaire, while the remaining participants dropped off the survey in the middle or right after the consent question. However, even if some of the participants did not finish the whole questionnaire, their answers, if valid and comparable, would still be used for the data comparison and contrast. Fifteen males and twenty-two females were involved in the study with valid responses to the question. Twenty-six of respondents reported coming from mainland China, which took up 40% of the entire number of participants, compared with two self-selected as New Zealand Europe or Pakeha (3.1% of overall participants), one from Pacific Islands, one from other European countries, and two participants self-selected as other ethnic groups. Out of the overall 65 responses, six participants had stayed in New Zealand for less than one year, 21 reported to have been in New Zealand for 1-5 years, 14 had been here for 6-10 years, and 7 participants reported being in New Zealand for over 20 years.

3.4 Online Questionnaire to Organizations in New Zealand(OQO)

The experimental status of the questionnaire may be one reason; the response rate of the questionnaire to people in New Zealand distributed through Facebook or Skykiwi was not as good as expected. The respondents received were not enough for even analysing one particular group. To be able to have more participation, environmental groups or animal protection groups in New Zealand were asked about distribution of the survey to their internal members or external pages such as Twitter or Facebook pages. Several organizations in human animal relations fields, or environmental fields were contacted to provide a more targeted sample with stronger opinions.

The Royal New Zealand Society for the Prevention of Cruelty to Animals (SPCA)[9] is a charity that helps protect animals, which are sick, lost, injured, abused or abandoned. They will contribute to the research, as the members of the organization would be more likely to be animal advocates. From their official website, the researcher attempted to find an email address to contact them on 10th of March 2016. Having had no response for over two weeks, the researcher rang the number listed on the same page as the email address[10]. Unfortunately, the reception people who answered the phone informed the researcher that they have no such platform for information distribution, so they are not able to offer much help in terms of the research.

Another organization the researcher approached is Save Animals from Exploitation (SAFE), who are actively involved in campaigns to protect the welfare of animals. Through the SAFE webpage[11], the researcher managed to find out a contact number for general enquires, and

[9] http://www.rnzspca.org.nz/ SPCA official website;
[10] http://www.rnzspca.org.nz/contact-us, SPCA
[11] http://safe.org.nz/contact-safe, SAFE.

gave them a ring on 10th of March 2016. The Supporter Engagement Assistant of SAFE at their Wellington office suggested the researcher email a brief introduction and relevant files to her to have a look into the research in detail, so that she could decide if SAFE has any suitable platform that can help. However, after thoroughly looking into the research purposes and the web platform the organization has, she suggested that there is not much SAFE could offer at that stage either.

The Royal Forest and Bird Protection Society of New Zealand (Forest and Bird), is an organization that speaks out on behalf of New Zealand's nature, aiming at the protection of native plants, animals and wild places in New Zealand. Members with a Forest and Bird background may be more against possums because they are damaging birds and forests in New Zealand. The researcher at first looked up their webpage as well, and on 10th of March 2016, tried to email the address they offered for general enquiries[12]. However, there was no response for two weeks, so the researcher made a phone call using the number they posted on the same web page. They could not offer any help in distributing the link to their internal page. However, they recommended the researcher post the link to the survey on their Twitter page, as well as their Facebook page.

The Department of Conservation (DoC), is a governmental organization in charge of conserving nature and the historic heritage of New Zealand. Members of DoC were assumed to be more against possums because of their effect on the flora and fauna in New Zealand. On the contact page of the DoC website[13], the researcher emailed first on 17th of March, and attached information about the purposes of the study. The Social Media Team of DoC informed the researcher that they have not a platform for this research to distribute the

[12] http://www.forestandbird.org.nz/contact-us, Forest & Bird.
[13] http://www.doc.govt.nz/footer-links/contact-us/, DoC.

online survey. However, when the researcher called the DoC office located in Christchurch city according to the phone number they posted online[14] on 23rd of March, their Biodiversity/Recreation/Historic Supervisor was so kind as to help the researcher in distributing the survey link to their internal mail list as well as distributing it to some external members.

To avoid mixing up participants from different groups, seprated links to a survey with same contents would help to differentiate their characteristics, and give us more insights into the topics from participants' particular organization backgrounds. The reason for doing that was because, members of each organization or group would have their own perceptions toward the topic because of members from one organization would be expected to have similar backgrounds. For example, members of The Department of Conservation may have a strong concern about pests in New Zealand from environmental points of view, so that they would be more negative toward possums, because they are aware of the damage possums have done to the country's environment. However, members of Forest and Bird would have a different structural position from that of DoC staff members.

In this research, links to the survey were distributed through the mailing list of the Department of Conservation and through the Facebook page of the Forest and Bird Organization. As a result, there was one response from the Forest and Bird Facebook page, and 62 responses were received from Doc staff members. There were no participants self-selected as mainland Chinese and 40 were reported as being New Zealand European or New Zealand Pakeha.

[14] http://www.doc.govt.nz/footer-links/contact-us/office-by-name/?mode=details&office=2801, DoC Christchurch Office.

3.5 Advertised Online Questionnaire on Facebook(OQA)

However, even with the help of DoC staff members and the poster on the Facebook page of Forest and Bird, the responses were still low, and not comparable with the overall population of Pakeha and Chinese people in New Zealand. In order to gather more data into the comparison, also to increase the population of Chinese participants to the research, online questionnaires were particularly advertised on Facebook to Chinese people in New Zealand. The benefit of using the Facebook advertisement is that information regarding features of potential audiences could be generated to accompany the data collection, and also help the researcher understand how the use of web pages can work better.

To create a Facebook advertisement, three categories of objectives were listed: to increase people's awareness of your brand or business; to find potential customers for your business; and to drive conversions or sales for your business. Each of them had their own detailed approaches. After thoughtful consideration, combined with the fund limitation, the researcher chose to let the Facebook advertisement increase people's awareness of the survey through promoting the webpage. To increase people's awareness of your brand or business, Facebook would try to reach people near your business, boost the posts, increase brand awareness and promote your page.

The researcher created a webpage which contained a link to the survey, with the entire Chinese introduction to the survey. When posting the advertisement of the survey, Facebook allows the advertiser to set targeted audiences of the advertisement. In terms of the targeted participants combined with the purposes of the advertised survey, the customized audiences of the page were narrowed to all the people living in New Zealand over 20 years old, who can speak both Chinese and English. The purpose of barrier was that the people

who can see the page were targeted participants who were in New Zealand who originally came from China exclusively. The assumption was that people who can speak both English and Chinese were more likely to be Chinese people. The age of all the targeted people was limited as well, being 20 or above. The time schedule can be set up on Facebook, both the length of the advertisement and more detailed post frequencies. The more complicated the respondents' selection process, the more costly the advertisement would be. Therefore the researcher went for the easiest but most effective way that put the advertisement on to Facebook in a scheduled timeframe, seven days from 12:08 pm, 21st of June 2016 to 7:00 pm, 28th of June 2016.

The content of the survey was still the same as the online questionnaire, while with a different survey link to differentiate the responses. A short introduction to the survey in Chinese was posted prior to the link, to attract people to get involved (see Image 1). Photos of possums were posted in advance as well, to give all the people a more precise idea of what the research or survey will be about, and how they look. Some people may have seen possums without knowing their name, or may have heard about possums without knowing what they look like. In addition, regular repost of links onto the Facebook page were conducted; as information updates on Facebook may be so fast that new links can bury the research link in a minute.

Figure 1. Advertisement on Facebook

However, even though the researcher posted the advertisement in Chinese characters; all four respondents were New Zealand Pakeha. Noticeably, while the Facebook advertisement approached over 20,000 people online, only 77 people clicked into the online link, 71% were females, and only four people participated in the survey.

3.6 Data Comparison with Secondary Datasets

With only 65 participants from the public, and 62 responses from DoC staff people, the respondents of the survey still would not be representative of either Chinese or Pakeha New Zealand people. They were neither a quota sample nor a large purposive sample including a great deal of variety, relative to the population in the country.

Hence, the researcher decided to assemble data from previous national surveys to re-analyse. Here, data from a previous year's International Society Survey Programme (ISSP) report, World Values Survey (WVS) and Survey of New Zealanders was collected to compare and contrast, with responses the researcher collected from the online survey. Some

questions in the online questionnaire were also from a previous World Values Survey or the Survey of New Zealanders, in order to compare and contrast.

ISSP is a continuing annual programme of cross-national collaboration on surveys covering changing topics in social science research. ISSP brings together pre-existing social science topics and a cross-cultural perspective to individual national studies. Unfortunately, China does not have any data recorded by ISSP. They repeat a survey on one topic after several years[15], so that data of ISSP can be used in tracing the changes in the same topic over years. In addition, datasets of ISSP previous survey were accessible to all the internet users for academic purposes with data collected on the environment topic since 1993, and then 2000 and 2010. The data in 2010 was used the most, as it was the most updated data in environment field worldwide.

World Values Survey is a global research project that explores values and beliefs of people all over the world, how they change over time and the social and political impact they have. It was founded in 1981 and registered in Sweden. It has done six waves of data collection, and is planning wave seven in the research period. They generate a survey with the same questions every five years, so data in the same country and in the same area could be tracked down over time[16]. China is also included in the survey. In this study, data of wave six of the World Value Survey, which was generated from 2010 to 2014, was used the most as it held the latest updates into relevant topics. Results of referred questions from the World Value Survey in the researcher's questionnaire were compared to see if there were any dramatic differences since wave six data had been generated. Data of New Zealand and data of Chinese in wave six were both taken into the researcher's data analysis.

[15] http://www.issp.org/page.php?pageId=4, International Social Survey Programme Survey topic in each year;
[16] http://www.worldvaluessurvey.org/, World Value Survey;

The Survey of New Zealanders was focusing on New Zealand only, conducted by the Department of Conservation[17]. They annually track the New Zealand public's engagement and attitudes to conservation, how they use the outdoors, as well as their views about DoC, and their use and enjoyment of public conservation lands and waters. The researcher managed to get the data of Survey of New Zealanders in 2015, which is the latest dataset by the research time.

Datasets from all the three sources helped this research to expand the analysis, also re-analysing that data helped understand how people's views changed over time.

3.7 Analysis and Analytical Framework

In the data analysis process, two analytical methods were adopted to compare the differences among datasets; standard deviation and confidence interval. Each method has its own applicable areas targeting specific cases during data analysis.

a) Standard Deviation

Standard deviation is "a measure of dispersion appropriate for interval-level variables" (De Vaus, 2002, p. 365). The purpose of a measure of dispersion is "to evaluate how well a mean summarizes a distribution. The greater the variation in a group the less well the mean represents what is typical" (De Vaus, 2002, p. 226).

This method is more useful for comparing groups in one sample. As for the research study, for instance, it is applicable for comparing the mean age of Chinese participants of different genders. Hence, we can have a brief idea about the age dispersion of female Chinese and

[17] http://www.doc.govt.nz/about-us/our-role/managing-conservation/recreation-management/visitor-statistics-and-research/survey-of-new-zealanders/, Survey of New Zealanders;

that of male Chinese. The smaller the standard deviation, the more representative of the mean to the sample, hence the more similar the individuals are within each age group in the sample.

Application of the data analysis method will be discussed in the following chapter.

b) Confidence Interval for Proportions

The interval variable is one in which the categories can be ranked from *low* to *high* in some meaningful way (De Vaus, 2002, p. 204). A confidence interval can be used to relate the results from the sample to a wider population (De Vaus, 2002, p. 208). It is used as a range computed using sample statistics to estimate an unknown population parameter with a given level of confidence[18].

Whose general form of confidence interval formula:

$$Point\ estimate \pm (multiplier)(standard\ error)$$

A confidence interval for proportion is applicable for estimating proportions of two or multiple samples, when both n*p and n*(1-p) are no less than 10. If p is unknown, use $\hat{p}$ as an estimate of p.

Confidence intervals can be computed with this formula:

$$\hat{p} \pm z\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

Where,

p= Population Proportion,

[18] https://onlinecourses.science.psu.edu/stat200/node/46, Confidence Intervals,

$\hat{p}$= Sample Size,

z= Multiplier.

n= Sample Size,

A confidence interval for a population proportion is constructed by taking the point estimate ($\hat{p}$) plus and minus the margin of error. The margin of error is computed by multiplying a z multiplier by the standard error, SE ($\hat{p}$)[19].

$$SE(\hat{p}) = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

The value of the multiplier (z) is dependent on the level of confidence. The most commonly used level of confidence is 95%. The multiplier associated with a 95% confidence interval is 1.96.The multiplier value in this research is taken as 1.96, with 95% confidence level.

The indications for the confidence intervals are that, if those of the two or more populations do not overlap, it is reasonable to conclude that the parameter values differ for the two or more populations. If the confidence intervals do overlap, then there is a reasonable possibility that the two parameters could have a shared value.

Using the above methods, similarities and differences between datasets and groups within one sample can be analysed and concluded.

4 Qualitative Interviews

To be able to interpret the results of the online survey, also as complementary data of the questionnaire, Chinese academics in New Zealand were interviewed to bring their particular perceptions of the research topic. Interviewees included Chinese people who were working

[19] https://onlinecourses.science.psu.edu/stat200/node/48, Confidence Intervals for proportions.

in New Zealand in the field of immigrants' experiences, mainly focusing on Asian immigrants, in pests and pests control field, in traditional Chinese medical therapy field. They were interviewed to provide their insights and their feelings about the research topic including the response of Chinese people to online surveys.

Pretests on the qualitative questions were conducted with some Chinese people who had stayed in New Zealand over several years. Two Chinese students studying in the University of Canterbury participated in the tests. Language problems as well as precision problems were fixed through the pretests.

Interview questions were edited in several drafts before deciding on the final version. Seven questions were included in the interview with different probes toward people from different academics backgrounds. Questions:

1. Please tell me a story about a recent encounter you have had with the natural environment.

2. How does the typical way that you interact with nature in New Zealand compare with a typical interaction with nature in China?

3. How does Chinese culture fit into New Zealand outdoor culture? How do Chinese people respond to NZ's forests and rare species when they arrive here?

4. Can you tell me how much you know about the situation with possums in New Zealand?

How do you think it would be handled if the possum issue were to happen in China?

5. Have you ever interacted with the possum situation in New Zealand? Please tell me about it.

6. What do you think is the attitude of Chinese people about getting involved in social surveys?

7. Is there anything else you want to talk about regarding nature and culture in New Zealand?

These questions started with a warm up question to open up the conversation so the interviewees would start talking about their story relating to nature in New Zealand. Meanwhile, the researcher was able to seize points relevant to the research topics and ask further questions accordingly. Then the researcher tried to narrow the topic down to the comparison of interaction with nature in New Zealand with that in China according to their professional fields. In addition, the communications further narrowed the spectrum of the topics to attitudes to nature in terms of culture differences between New Zealand and China. Then the possums issue in New Zealand and China was covered in detail. Because of the fewer than expected responses from online survey, Chinese people's attitudes toward social surveys were mentioned in the topic as well, to see if they had any cultural perspectives toward that.

The expectations were that if they had been working in universities or Crown Research Institutes in New Zealand, they would be involved in the local society to some extent through their research, and they would know more about the local perceptions regarding their proficiency area. In the meantime, those respondents had experienced cultural interaction between New Zealanders and the average Chinese people in New Zealand. If all these expectations were valid, those people who were interviewed would offer more insights into the cultural interactions in the human animal relations field.

5 Ethics and Data Collection

The University of Canterbury had a licence for the online questionnaire with software Qualtrics, which is web based data collection software, with the ability to involve a broad range of participants with internet access. Through this, anonymous links to the questionnaire were distributed from which no one could be located or identified. Questionnaire participants were shown a link on public social software Facebook and Skykiwi, and self-selected to participant in the survey. See photo below.

Figure 2. Survey Introduction on Facebook

All the participants were told in an introductory message that they could stop doing the survey at any point while filling out the questionnaire. There was also a compulsory question at the beginning of the questionnaire to make sure all the participants had read and understood the anonymity and confidentiality promised. Also, contact details of the

researcher were shown at the start of the questionnaire, as well as the place they could report to if they had any concern or complaint regarding their participation in the survey.

Data was recorded automatically and a database was generated by a software system, which was exported to another analysis programme-IBM SPSS Statistics. Hence, using the software helped both time saving for the researcher in inputting the questionnaire data to software, and protected the anonymity of the participants through lessening human involvement in the processes (Bryman, 2016). It was efficient and gave the survey a very professional appearance. To insure the security of the data storage, all the data analysing processes were only progressed on the computer in the researcher's office, which was located in the University of Canterbury, with highly secured anti-virus software Sophos Protection on real-time protection. The cookies of the internet were cleared every week. Also, for access to the questionnaire data, the downloaded and encrypted data file was stored in a hidden offline folder in a complicated location in the computer; a password to the folder was required too.

As for interviews with Chinese academics, all the data given by participants remained confidential. Appointments were made with participants before meeting, with a brief introduction of the study, and the contribution of their presentation both to the Master's thesis of the researcher and academic usages in the future by the researcher. Consent forms with a detailed information sheet, were signed by and interpreted for the participants before interview. Tape recording and notes were taken while interviewing. They were given a full explanation that they could withdraw their data at any points during or after the interview, then when the research was completed and the period of data storage required by UC Policy was over, the notes the researcher took, and the recorded file as well as the transcripts of the interview would be deleted completely.

For the interview data, the digital files, including the audio records and other electronic files, were stored in the way the researcher stored the data for online questionnaire participants. Consent forms and physical paperwork of the participants were stored separately locked in separate drawers. Only the researcher could connect the data of the participants and their identity. The interviews were generated in the places with agreement of the participants. For professors in places apart from Christchurch, interviews were conducted through telephone, in the pre-appointed time, with the explained time length. For professors working in Christchurch, the place where the research was being conducted; the interviews were held at their office. All the copies of the data and questionnaires will be stored safely for at least 5 years with the electronic copy deleted and paper questionnaires shredded after that.

6 Limitations of Methods

The limitations of the study came from the characteristics of participants in the online questionnaire. Participants were those who had internet access during the research time frame, and occasionally received the link distributed by either the researcher or the researcher's friends. Hence, the characteristics of people who surf the internet regularly would be the personality toward which the research was biased. Also, the Snowball sampling method would potentially result in a similar background of all the participants from Facebook users. In addition, the purposes and characteristics of self-selected participants are something we need to clarify as well. The number of Chinese participants is the major limitation. This will be commented on during the data analysis.

7 Conclusions

Overall, this study is rather exploratory, the researcher had to generate a research method or methods according to what the research subject was. After referring to reasons of success or failure of previous studies, combined with the purposes and features of this research, mixed research methods were adopted. To answer each of the research questions, the researcher had to refer to previous studies which were most relevant to and most fit for this particular research question. Then, to make all the research results comparable, the researcher managed to pick up the pros and cons of each research method, as well as the parts that are able to link all the methods together. Still, some segments of this research failed for multiple reasons; yet the other research methods were also conducted to fix the insufficiency of the research procedure as a whole.

The following chapter will explain in detail that what each research method achieved and what each research method needed to do further to make the whole study make sense and be more reliable.

Chapter Four: Identity of Participants

1 Introduction

Three stages were adopted in the research; online research questionnaire distribution, data comparison with nationwide surveys, and interviews with Chinese academics. This chapter will define the participants involved in the research, from both the research survey and the nationwide surveys. In combination with the interviews conducted with Chinese academics, interpretations on some trends and identifications of research participants will be analysed.

2 Research Results Overview

Results for all the research methods adopted in this study are listed below.

Table 1. Responses Received from Each Research Method

	OQG (Online Questionnaire to General)	OQO (Online Questionnaire to Organization)	OQA (Online Questionnaire Advertised to Chinese)	ICA (Interview of Chinese Academics)
Overall Number Used in Analysis	26	50	0	6

An overall 65 responses were received from the public in New Zealand through online Facebook or Skykiwi. However, some of the respondents dropped off the survey in the middle and some quitted right after the consent question. As a result, from the research survey to the public, twenty-six participants self-selected as Mainland Chinese. Their data is used in the analysis

From the survey to members of the Department of Conservation, fifty participants self-selected their ethnicities, including forty NZ European or Pakeha, and ten from other ethnicities. No participants self-selected as Chinese from the DoC survey.

The Facebook Advertisement received four responses. All had all lived in New Zealand for over 20 years, and all self-selected as NZ European or Pakeha. The group comprised three male participants and one female participant. All of them reported disliking possums and three of them reported having had, or still have pets at home. The comments received for the last open-ended question indicated the following preferences. One participant showed a strong anti-possum perception and wanted possums to be exterminated. One reported having hunted, skinned and killed possums for years, and understood the effect of possums on environment; but also showed concern about the use of 1080. One reported having a relevant qualification in forest management and being well equipped with knowledge of possum damage of fauna and flora. The female participant reported being ambivalent regarding the killing possums; she understood the possum problem but felt uncomfortable about killing of them. However, there were not enough responses for further analysis.

The focus of the research is the difference between Chinese people and New Zealanders, which includes people from all the other ethnicities living in New Zealand for over one year. All the responses received without clear ethnicity status were excluded from the data analysis. Hence, the overall sample size which contributed to the research is twenty-six Chinese people and fifty people from the DoC survey.

3 Data Achieved Compared with Other Data Sources

As the research compared data results with previous nationwide surveys, such as 2010 International Social Survey Programme (ISSP) in Environment topic, the Sixth Wave of World Value Survey (WVS) which was conducted in 2010-2014, 2015 Survey of New Zealanders (SNZ) and 2013 Census data, participants of those nationwide surveys need to be clarified in advance.

The ISSP participants were randomly selected from the 2010 New Zealand Electoral Roll, which contains the names of all registered voters over the age of 18 years[20]. The achieved sample was overall representing the New Zealand population over 18 years of age, but people under 30 were underrepresented and people over 60 were over represented. More women participated in the survey than men did. Participants for the Sixth Wave World Value Survey were randomly selected from the New Zealand Electoral Roll, which contains name, address, electorate, age, gender, occupation and Maori identifier. Two thousand people were approached, and only the Maori population had been over sampled[21]. The proportion of people who self-selected with Maori ethnicity in the sample was more than the proportion that indicated they were Maori in the Electoral Roll. As for the Survey of New Zealanders carried out by DoC, participants were also selected from the Electoral Roll records of the New Zealanders aged 18 and over[22]. Oversampling was conducted intentionally in the 2015 Survey of New Zealanders on all regions to ensure all sub-sample targets were met. This was also the case for Maori, youth, males, 25-49-year-olds and other

[20] http://zacat.gesis.org/webview/index/en/ZACAT/ZACAT.c.ZACAT/ISSP.d.58/by-Year.d.69/International-Social-Survey-Programme-Environment-III-ISSP-2010/fStudy/ZA5500, participants selection for ISSP 2010 survey in New Zealand

[21] http://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp, WVS Wave 6 Sampling and Methodology.

[22] http://www.doc.govt.nz/about-us/our-role/managing-conservation/recreation-management/visitor-statistics-and-research/survey-of-new-zealanders/2015/, 2015 Methodology Report: Survey of New Zealanders.

hard-to-reach respondents, as assumed from the previous National Surveys as hard-to-reach people. They also admitted that there could be a bias against youth that are not registered or those without postal addresses, and other possibilities, even though the Electoral Roll is the best available source, as the census database is not available.

3.1 Gender

Gender status across data sources is listed in the table below.

Table 2. Gender Status across Data Sources

	Female	Male	Total
Chinese Sample	57.7% (15)	42.3% (11)	100% (26)
Chinese in ISSP	63.3% (19)	36.7% (11)	100.0% (30)
Chinese in NZ Census[23]	53.0% (90,870)	47.0% (80,541)	100% (171,411)
Asian in WVS	43.8% (7)	56.2% (9)	100.0% (16)
Asian in SNZ	53.0% (219)	47.0% (198)	100.0% (417)
Asian in ISSP	53.2% (25)	46.8% (22)	100.0% (47)
Asian in Census[24]	51.9% (244,662)	48.1% (227,046)	100.0% (471,708)
DoC Sample	34.7% (17)	65.3% (32)	100% (49)
DoC Profile[25]	36.3% (643)	63.7% (1,127)	100% (1,770)
NZ in ISSP	53.5% (627)	46.5% (545)	100.0% (1,172)
NZ in WVS	57.7% (463)	42.3% (339)	100.0% (802)
NZ in SNZ	52.0% (2,090)	48.0% (1,905)	100.0% (3,996)
NZ Census Total	50.8% (2,250,000)	49.2% (2,180,000)	100.0% (4,430,000)

[23] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx?request_value=24737&tabname=Age,sex,andethnicities; census data of Chinese people in New Zealand in gender distribution;
[24] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx?request_value=24727&tabname=Age,sex,andethnicities, census data for Asian people in New Zealand as of in2013;
[25]http://www.doc.govt.nz/about-us/our-role/corporate-publications/annual-reports-archive/annual-report-for-year-ended-30-june-2008/organisational-capability/building-people-capability/; gender distribution of DoC members

From the 2013 Census ethnic group profiles, including age and sex, it was reported 47% of Chinese in New Zealand were male, and 53% were female. As of June 2012, the national population estimated that, there were 2.18 million males and 2.25 million females in the country. This information was used in this research as background data. In addition, from the 2010 ISSP survey in environment, gender status of Chinese ethnicity was specified; as well as the Asian ethnic group from the Sixth Wave of World Value Survey. Both are listed in the above table. Gender distribution in the Department of Conservation survey was collected from the DoC website as well, as background data of DoC staff members. 'Chinese Sample' in the table above, represents data collected from my survey of the public in New Zealand, whose ethnicity was self-selected as Mainland Chinese. The DoC Sample represents data collected from the research survey of members of the Department of Conservation.

According to the table above, the confidence interval in terms of gender differences were constructed from the census data. As a result, we are 95% confident that the proportion of female population of Chinese in New Zealand is between 52.8% and 53.2%, and the proportion of Chinese males in New Zealand is between 46.8% and 47.2%. That confirms the statement that there are more Chinese females in New Zealand than males (Badkar, Callister, Krishnan, Didham, & Bedford, 2007). In addition, for the Asian people, we can be 95% confident in stating that the female population proportion of the entire Asian people is between 51.7% and 52.0%, compared with the male population being within 58.6%-58.9%. That verifies the fact that there are less Asian females in New Zealand than males. This helps the research data interpretation in the following sections.

As for the DoC sample, we are 95% confident that the proportion of females in DoC is between 23.4% and 45.9%. According to the DoC census data, the female proportion is

between 34.4% and 38.2%, which is within the area the DoC sample from the research survey predicts. Hence, there is no significant difference between the DoC sample and the total DoC staff data in terms of female member proportion. Later on, the confidence interval was conducted on the male proportion from the DoC census data, and it supported the statement that there is a population difference between male and female members of DoC. According to the table above, there are fewer female members than male members in DoC. The possible explanation is that DoC has a particularly targeted job profile. Hence, even with the rather limited sample size collected from the research surveys, with no clear difference in gender proportion distributions with census dataset, the research study can be treated as a quota sample that would offer indications with its data results. The problem in gaining representative samples from any source is clear.

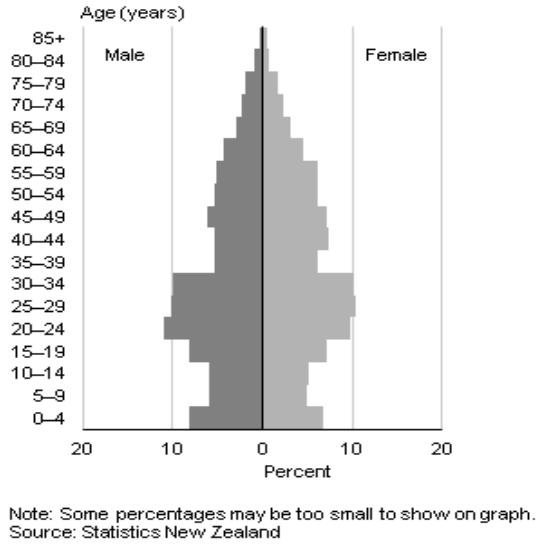
3.2 Age Groups

According to the census data from Statistics New Zealand, there were 18.3% of Chinese people in New Zealand reported under 15 years, 28.3% between the age of 15-29, 44.9% between 30-64 and the remaining were 65 years and over (Statistics New Zealand, 2013, Augest 19). The two figures below indicate the distribution of age groups of Chinese people in New Zealand from the census and that of New Zealand census data, which were referred from the Statistics New Zealand. The biggest proportion of the age groups of Chinese people was between 15-34, compared with that of New Zealand people which was between 40-54. The indication is that in 2013, Chinese people in New Zealand are generally younger than New Zealanders. There is also clear indication that there were more middle-aged Chinese (20-34) people than all the other Chinese age groups. The possible reason for this could be the inflow of the Chinese international travellers and students, as well as the new

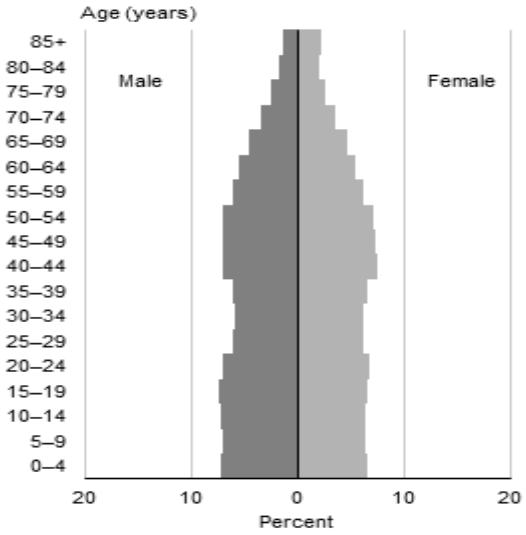
immigrants from China[26], who were included, but on temporary visas before the census data reference date.

Figure 3. **Age Group and Sex of Chinese Ethnic Group in NZ 2013 Census[27] (Left)**

Figure 4. **Age Group and Sex of People in New Zealand 2013 Census[28] (Right)**



Note: Some percentages may be too small to show on graph.
Source: Statistics New Zealand



Source: Statistics New Zealand

To give a clearer view of Chinese people's age distribution compared with that of New Zealanders, the age status for participants from various data sources were listed together, including the data of Chinese samples, Asian samples, and New Zealanders' samples. From the table below, *Age Group,* we can see that many of the Chinese people involved in the survey were aged between 20-39 years (88.4%), whereas the majority of the DoC staff members (95.9%) were aged over 30-years. A general confidence interval was conducted for both the Chinese sample and the DoC staff sample. When the confidence level was at 95%, the mean age of the Chinese sample is 28.27, with CI [24.71, 32.54], and mean age of DoC

[26] http://www.stats.govt.nz/methods/research-papers/topss/experimental-pop-est-from-linked-admin-data-methods-results/methods.aspx census data participants population estimate method;
[27] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx?request_value=24737&tabname=Age,sex,andethnicities#, Chinese census in age, sex and ethnicities;
[28] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=13067&tabname=Ageandsex New Zealand Census in age and sex;

staff members is 45.22, with CI [42.09, 48.36]. Hence, we can confirm that there were significant age differences between Chinese people and DoC staff people involved in the research. The rather different age distributions between the two groups may contribute to the indications of the data analysis in the following sections.

Table 3. Age Group

Age Group	Below 20	20-29	30-39	40-49	Over 50	Total
Chinese Sample	8.3% (2)	54.2% (13)	29.2% (7)	4.2% (1)	4.2% (1)	100.0% (24)
ISSP Chinese Sample[29]	0.0% (0)	20.0% (6)	6.7% (2)	20.0% (6)	53.3% (16)	100.0% (30)
WVS Asian	6.7% (1)	20.0% (3)	20.0% (3)	33.3% (5)	20.0% (3)	100.0% (15)
ISSP Asian Sample	0.0% (0)	20.0% (6)	6.7% (2)	20.0% (6)	53.3% (16)	100.0% (30)
Asian Census[30]	25.1%	20.7%	18.2%	14.9%	21.0%	100.0% (431,133)
DoC Sample	0.0% (0)	4.1% (2)	38.8% (19)	22.4% (11)	34.7% (17)	100.0% (49)
WVS Sample	2.1% (17)	10.0% (83)	14.3% (118)	20.0% (166)	53.6% (444)	100.0% (828)
ISSP NZ Sample	2.6% (31)	11.3% (133)	14.4% (169)	16.9% (198)	54.7% (641)	100.0% (1172)
NZ Census	27.4%	12.9%	12.4%	14.3%	33.0%	100.0% (4,242,065)

Confidence intervals were conducted to compare proportions of the combined age group 20-49 from different data sources. As discussed in the Methodology Chapter, the condition for a valid confidence interval is that both n*p and n*(1-p), sample population and non-sample population, should be equal or more than 10. Hence, for this study, there were no confidence intervals which could be verified for the Chinese sample or the WVS Asian sample. When the confidence level was set up at 95%, we can confirm that there were 31.6%-61.7% of the ISSP Chinese sample within the age group 20-49 years. As a comparison, there were 53.7%- 53.9% of the Asian Census, 54.1%-76.6% of the DoC sample, and 39.6%-39.6% of the NZ Census were aged between 20-49 years. As a result, we can be 95%

[29] Age for ISSP participants is as when the survey was conducted, which was in 2010;
[30] http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE8021#, Asian age group;

confident to say that, the Department of Conservation has the highest proportion of people aged between 20-49 years, compared to that of Asian people in New Zealand and that of the New Zealand Census.

Also, there were 37.3%-71.0% of the Chinese sample aged between 20-29 years, compared with 20.6%-20.8% of Asian and 12.9%-13.0% of NZ people. Thus we can conclude that the proportion of Asian people in the age group 20-29 years is higher than that of New Zealanders. Chinese participants from my research have the highest population proportion in the age range 20-29 years.

3.3 Educational Levels

The educational status of Chinese participants and participants from the DoC staff were listed and compared with the census data in New Zealand to offer a brief overview of the shape of the dataset I collected. Also from the 2013 Census ethnic group profiles, Chinese, the educational status of Chinese people in New Zealand was reported. Here, Census data listed with DoC was collected in 2013 from all the public in New Zealand who may not be represented by DoC, but can be used as a quota sample to compare with other sample groups. In the table, 'qualifications lower than Bachelor's' refers to those participants, who have school qualifications only, or a trade or professional certificate, or a diploma degree below bachelor level. 'Bachelor's degree or higher' refers to those participants who had a bachelor's degree or postgraduate degree or higher.

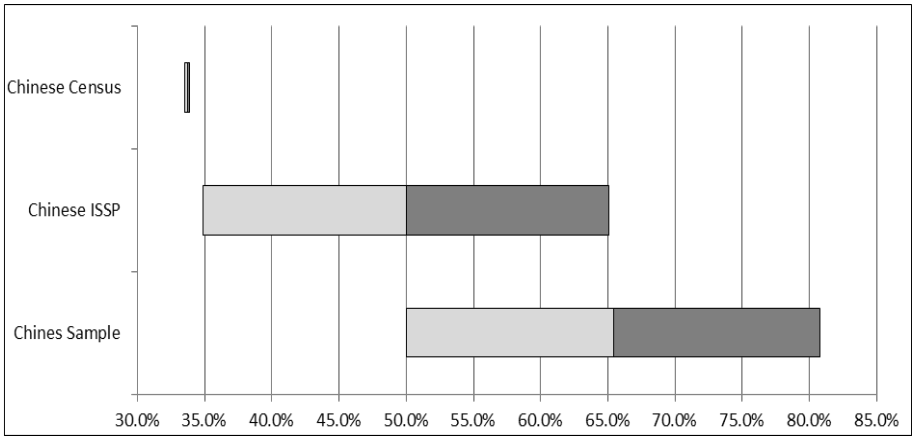
In order to have a bigger sample size, the group qualification lower than bachelor's is combined from the group of a qualification lower than a degree, and the group with secondary school qualifications, which are both original groups which appeared in the questionnaire.

Table 4. Educational Status

	No Formal Qualification	Secondary School Qualifications	Bachelor's Degree or Higher	Total
Chinese Sample	7.7%(2)	26.9% (7)	65.4% (17)	100.0% (26)
Chinese in ISSP	16.7% (5)	33.3% (10)	50.0% (15)	100.0% (30)
Chinese in NZ Census[31]	13.3% (17,554)	53.0% (69,953)	33.7% (44,479)	100.0% (131,986)
DoC Sample	2.0%(1)	36.0% (18)	62.0% (31)	100.0% (50)
NZ in ISSP	17.8% (204)	61.0% (701)	21.2% (243)	100.0% (1148)
NZ in WVS	1.5% (12)	68.6% (533)	29.8% (231)	100.0% (776)
NZ Census[32]	20.9% (628,308)	59.1% (1,569,429)	20.0% (601,305)	100.0% (3,000,636)

The educational status of neither the Chinese participants nor the DoC staff members were compliant with that of census data. Confidence intervals were conducted to generate comparisons. Details are indicated in the figure below.

Figure 5. Box Plot of High Education Proportion of Chinese



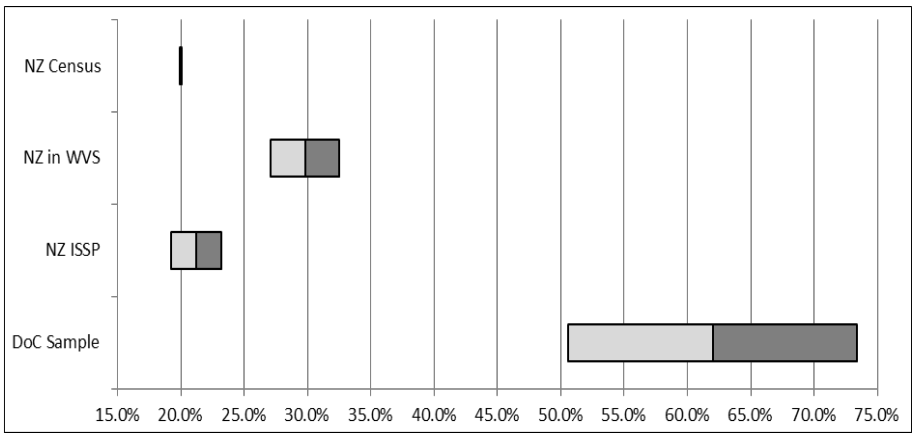
The box plot highlights the variance of the small sample size. The wider the box, the more possibilities the population proportion could be, and then the less precise the research result. Overlaps between two boxes, or more, indicated the similarity of the proportions.

[31] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx?request_value=24737&tabname=Education, educational status of Chinese people age 15 years and over in New Zealand

[32] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/qstats-education-training.aspx, New Zealand census data, education and training in New Zealand.

Where there is no overlap between two boxes, this indicates the significant differences between the two groups in terms of the population proportions. Proportions of Chinese participants who have a Bachelor's degree or higher are ranged between [0.335, 0.339] for Chinese in Census, [0.349, 0.651] for Chinese in the ISSP, and [0.50, 0.808] for my Chinese Sample. Hence, we can confirm that both the Chinese Sample from the research and the Chinese ISSP participants have a higher educational level than that of those in the Chinese Census. Alternatively, we can conclude that Chinese people in the research study with high educational level has been over-represented.

Figure 6. Box Plot of High Education Proportion of NZers



Similarly, the educational level at or above Bachelor's Degrees in all the other four groups have been generated into confidence intervals. With the confidence level setup at 95%, we can confirm that the DoC Sample has the largest proportion in terms of high education, than those of NZ in WVS and NZ in the ISSP and the NZ Census.

As mentioned in the section 2, participants in the ISSP under 30 years old have been under-represented, whereas those who are over 60 have been over-represented. That can be one reason that NZ ISSP has relatively fewer people with a high education, as there were

insufficient educational resources or fewer requirements to have higher education in the early years.

The other possible deduction from the above statements is that the research survey was done online, so we can assume some people with a lower educational level may have less, or no internet access, which diminishes their possibilities of participating in the survey. Also, the education requirement in job hunting has increased over years, contributing to the fact that people in the work force have higher average educational status than in previous years (Bailey, 1991). Moreover, the average age of the Chinese participants from the research survey is younger than that of the Chinese Census data in 2013. They are more likely to have higher education that the general Chinese in New Zealand, and tend to have more chance to access the internet. The same reasoning applies to the DoC staff members. In addition, some people may be less knowledgeable about possums so they are less likely to participate in a survey that does not interest them.

Further, we constructed confidence intervals for the New Zealand census data and the Chinese census data in terms of their educational levels. Clearer differences can be found in the table below.

Table 5. Confidence Interval for Educational Levels of Chinese and New Zealanders

	No Formal Qualification	Qualification Under Diploma	Diploma	Bachelor's Degree or Higher
Chinese Census	13.1%-13.5%	45.1%-45.5%	7.6%-7.8%	33.5%-33.9%
New Zealanders Census	20.8%-21.0%	49.6%-49.8%	9.3%-9.5%	19.9%-20.1%

As shown in the table, Chinese people in New Zealand are more likely to have a higher educational level than the general New Zealand public. Particularly, Chinese people who have a bachelor's degree or higher outnumbered that of New Zealand census data. This

finding is consistent with the case study done by Yao, Thorn, Duan, and Taskin (2015), where 75% of Chinese participants have at least a bachelor's degree. The possible reason for the high educational level of Chinese people in New Zealand may be that most of the Chinese people are first generation immigrants in New Zealand, who have migrated as skilled or business migrants, which both require some education to meet the immigration criteria (Yao et al., 2015).

3.4 Residence Places

The residence status for people identified as the Chinese ethnic group [33]is also deduced from the census data. The data from the research surveys from different groups, Chinese and DoC, can be compared as a preliminary description of the data analysis. Also, with the question which was copied from the ISSP data in 2010, results of ISSP survey are seen in the table below as well.

Table 6. Residence of Chinese and DoC Members

	A Big City	The Suburbs of a Big City	A Small Country Town	A Country Village	A Farm or Home in the Country	Total
Chinese Sample	65.4% (17)	19.2% (5)	11.5% (3)	3.8% (1)	0.0% (0)	100.0% (26)
ISSP Chinese Sample	53.3% (16)	33.3% (10)	13.3% (4)	0.0% (0)	0.0% (0)	100% (30)
DoC Sample	4.0% (2)	28.0% (14)	40.0% (20)	8.0% (4)	20.0% (10)	100.0% (50)
ISSP NZ Sample	18.8% (220)	28.0% (328)	34.0% (399)	7.8% (91)	11.4% (134)	100.0% (1172)

[33]http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx?request_value=24737&tabname=Populationandgeography , 2013 Census ethnic group profiles: Chinese.

When we conducted confidence intervals for the population of Chinese and New Zealanders from 2010 ISSP survey, obvious differences could be found from the two samples. We are 95% confident that 38.3%-68.4% of Chinese people in New Zealand live in big cities, compared with 16.9%-20.7% of New Zealand people inclusive of Chinese ethnicity, 14.8%-18.5% exclusive of Chinese ethnicity. Hence, we can state that Chinese people in New Zealand are more likely to live in big cities than other ethnicities.

As for the dispersed places of residence of the DoC staff members, the reasons could be that most of the DoC projects are concerned with rural places, which the DoC staff members would need to live near. However, when we combined the participants who self-selected as living in a big city and those who lived in the suburbs of a big city as one group, and also those who reported living in a country village and those who lived on a farm or home in the country together as another group, confidence intervals were conducted to generate differences in their preferences of living places.

We can conclude that, when the confidence level was set up at 95%, there were roughly 72.9%- 96.3% of my Chinese Sample living in cities (a big city, and the suburbs of a big city), and roughly 76.4%- 96.9% of the Chinese ISSP sample living in big cities. There was no difference between the two group found from the research results. However, for people living in cities, there were 21.1%- 42.9% of the DoC sample reported, and roughly 44.3%-49.2% of the ISSP sample reflected that. We can conclude that fewer DoC staff members live in cities than the general ISSP participants.

As a result, Chinese people in New Zealand tend to live in big cities, and DoC staff members are more likely to live in rural areas.

3.5 Other Status Comparisons

Pet ownerships of each participant group and other status are generalized into tables below.

Table 7. Other Status

	Do you have any pets at home		Are you vegetarian		Are you member of any animal protection group or organization	
	Chinese	**DoC**	**Chinese**	**DoC**	**Chinese**	**DoC**
Yes	50.0% (13)	92.0% (46)	0	10.0% (5)	0	14.0% (7)
No	50.0% (13)	8.0% (4)	26	90.0% (45)	26	86.0% (43)
Total	**100.0% (26)**	**100.0% (50)**	**26**	**100.0% (50)**	**26**	**100.0% (50)**

The pet ownership rate is higher for DoC staff members than for Chinese participants. That can also be proved by confidence intervals in proportions. That is, we are 95% confident that pet ownership of the Chinese sample is around 33.8%- 66.2%, compared with that of DoC members, which is around 85.7%- 98.3%. Clear differences can be seen from the interval areas, that there is a significant difference in terms of pet ownership between Chinese and DoC staff members. This result is consistent with that of 2016 Companion Animals in New Zealand report, in which pet ownership is highest among people living in rural areas, those who are aged 34-49 years and whose ethnicity as European New Zealanders (New Zealand Companion Animal Council Inc, 2016b). As we have discussed in the above sub-sections, the DoC staff members are mostly European New Zealanders, aged more than 30 years, and living in rural places. In the same report, 48% of the Asian ethnic group reported having companion animals, which is similar to the research result, that 50% of Chinese participants reported having pets (New Zealand Companion Animal Council Inc, 2016b).

Regarding the dietary status of the participants, 10.0% of DoC staff members reported being a vegetarian, compared with no Chinese people who reported as being vegetarian. The same applied to the animal protection organization membership status; no Chinese people

reported being a member of any animal protection group, yet a number of DoC participants (14.0%) reported being members of an animal organization. The effect of these two features in influencing the attitudes toward possums and other factors will be discussed in the following sections.

4 Favorability to Possums

As possums have been one of the main pest species in New Zealand for decades, the attitudes of New Zealanders to possums are clear. The government encourages international travellers to buy possum products, researchers endeavour to find a way to exterminate possums while not causing any side effects to other species, and the public is supportive in the killing of possums (Blaschke et al., 2000; Carbery, Hill, & Deane, 2007; Potts, 2009). Members of the Department of Conservation are doing environment-related jobs, which increases the chance of them encountering possums, and the damage they cause. Hence, they have stronger anti-possum attitudes than the public in New Zealand.

Table 8. Attitudes of Research Paticipants to Possums

		Ethnicity	
		Chinese	**DoC**
How do you think about them?	I like possums.	26.9% (7)	20.0% (10)
	I don't like possums.	30.8% (8)	80.0% (40)
	I don't know about possums	42.3% (11)	0.0% (0)
	Total	**100.0% (26)**	**100.0% (50)**

From the research survey, attitudes of the participants to possums were investigated with reference to the Chinese group and DoC staff members. From this, 80% of DoC staff members reported not liking possums, compared with only 30.8% of Chinese. In addition, there were 42.3% of Chinese respondents who reported not knowing about possums,

compared with no members from DoC staff reporting that they did not know about possums.

Detailed features of each ethnic group with their preferences towards possums are interpreted in the following sub-sections.

4.1 Gender and Attitudes to Possums

As the sample size is rather limited, no valid correlation could be made to test the significance of the difference. However, from the percentage, also as a case study to analyse the perceptions of the Chinese participants toward possums, there is indication that there are more female Chinese who reported liking possums than male Chinese. This trend is aligns with the study conducted by Czech, Devers, and Krausman (2001), in which females were more supportive of animal preservation than males.

Table 9. Gender and Attitudes to Possums

Ethnicity			Gender		Total
			Male	Female	
Chinese	How do you think about them?	Other	63.6% (7)	73.3% (11)	69.2% (18)
		I don't like possums.	36.4% (4)	26.7% (4)	30.8% (8)
		Total	**100.0% (11)**	**100.0% (15)**	**100.0% (26)**
DoC	How do you think about them?	Other	28.1% (9)	5.9% (1)	20.4% (10)
		I don't like possums.	71.9% (23)	94.1% (16)	79.6% (39)
		Total	**100.0% (32)**	**100.0% (17)**	**100.0% (49)**

In the above table, the responses for 'I like possums' and 'I do not know about possums' are combined to make larger sample groups. More male members than female members from the Department of Conservation reported they like possums. The possible reason for the conflicting perceptions of DoC staff members is that they like possums as an animal, but also

know about the effect possums have had on the country. Detailed explanation can be further explored in future studies.

4.2 Age and Attitudes to Possums

Later on, age groups of the participants in their ethnicities were generated, and their attitudes to possums were detailed.

Table 10. Age and Attitudes to Possums

Ethnicity			What Age Group Do You Belong To			Total
			Below 20	20-49	50 or Above	
Chinese	How do you think about them?	Other	100.0% (2)	66.7% (14)	100.0% (1)	70.8% (17)
		I don't like possums.	0.0% (0)	33.3% (7)	0.0% (0)	29.2% (7)
		Total	**100.0% (2)**	**100.0% (21)**	**100.0% (1)**	**100.0% (24)**
DoC	How do you think about them?	Other	0.0% (0)	18.8% (6)	23.5% (4)	20.4% (10)
		I don't like possums.	0.0% (0)	81.2% (26)	76.5% (13)	79.6% (39)
		Total	**0.0% (0)**	**100.0% (32)**	**100.0% (17)**	**100.0% (49)**

As seen in the table above, also as mentioned in previous sections, the majority of Chinese participants were within the age groups of 20-49 years, only a few of them were either younger than 20 or older than 50 years. Chinese people below 20 years of age all reported '*other*'. Twice as many of the Chinese people in age group 20-49 years reported 'other' than those who reported they do not like possums. As a result, 29.2% of Chinese people reported they do not like possums.

Regarding DoC members, participants who reported not liking possums outnumbered those who chose '*other*'. Younger people tended to have a slightly stronger anti-possum attitudes than older people. As for both the Chinese sample and the DoC sample, the age group 20-49 years has the largest proportion who reported not liking possums.

4.3 Education and Attitudes to Possums

The educational status of all the participants was dispersed, with most of the participants having at least a formal qualification. The questionnaire had six categories: no formal qualification, school qualification, trade or professional certificate, diploma below bachelor level, bachelor's degree and postgraduate or higher qualification. There were no significant correlations which could be found between educational backgrounds and attitudes toward possums. This is demonstrated through the bar charts listed below.

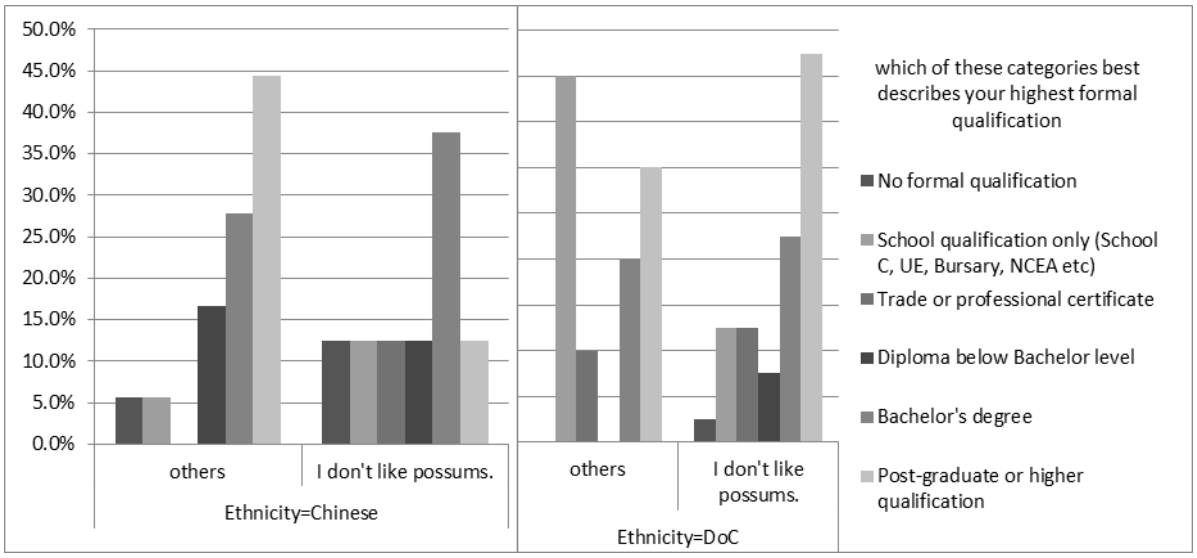


Figure 7. Educational Status of Participants

As shown in the above bar charts, most of participants from Mainland China have at least a formal qualification, and the majority of Chinese people have a bachelor's degree or higher. However, participants from DoC staff members were with varied educational backgrounds, so that the uneven proportion of participants with different educational backgrounds made the overall attitudes of participants towards possums dispersed.

Because of the small sample size, three categories were generated in the data analysis. Participants who reported having a school qualification and those who have a trade or professional certificate, as well as those who reported with a diploma, were grouped as

Qualification under Bachelor. Participants who reported having a bachelor's degree and those who reported having postgraduate or higher qualifications were grouped as Bachelor's degree or higher. See table below.

Table 11. Educational and Attitudes to Possums

Ethnicity		Which of These Categories Best Describes Your Highest Qualification?			Total
		No Formal Qualification	Qualification Under Bachelor	Bachelor's Degree or Higher	
Chinese	Other	5.6% (1)	22.2% (4)	72.2% (13)	100.0% (18)
	I don't like possums.	12.5% (1)	37.5% (3)	50.0% (4)	100.0% (8)
	Total	**7.7% (2)**	**26.9% (7)**	**65.4% (17)**	**100.0% (26)**
DoC	Other	0.0% (0)	50.0% (5)	50.0% (5)	100.0% (10)
	I don't like possums.	2.5% (1)	32.5% (13)	65.0% (26)	100.0% (40)
	Total	**2.0% (1)**	**36.0% (18)**	**62.0% (31)**	**100.0% (50)**

In the Chinese sample, there is no clear indication of the correlation between attitudes and participants' education statuses, because of the small sample size but people with more education may be more likely to like possums. There is no difference for the DoC sample. The proportions are almost identical- 65% and 62%.

4.4 Places of Residence and Attitudes to Possums

As shown in the table below, places of residence of all the survey participants were generated to differentiate their attitudes to possums. The indication from table below is that DoC staff members, regardless the place where they live, are more anti-possums than Chinese participants, 80.0% comparing with 30.8% of Chinese people.

The table also indicates that people who live in the big cities are less likely to report they do not like possums. On the contrary, people live in towns or villages have a greater proportion

who reported they do not like possums. Besides, Chinese people have shown to be less anti-possums than DoC staff members have.

Table 12. Residence Places and Attitudes to Possums

Ethnicity			Would you describe the place you live as		Total
			A big city	Town & Village	
Chinese	How do you think about them?	Other	72.7% (16)	50.0% (2)	69.2% (18)
		I don't like possums.	27.3% (6)	50.0% (2)	30.8% (8)
	Total		**100.0% (22)**	**100.0% (4)**	**100.0% (26)**
DoC	How do you think about them?	Other	25.0% (4)	17.6% (6)	20.0% (10)
		I don't like possums.	75.0% (12)	82.4% (28)	80.0% (40)
	Total		**100.0% (16)**	**100.0% (34)**	**100.0% (50)**

The assumption is that the more rural is place the participants live in, the more possibility there is of them encountering possums, so that they are more likely to experience possums as hazardous, hence are less likely to advocate for possums. This statement is supported by the fact that DoC staff members are more against possums than general people are. On the contrary, participants who live in urban areas are less likely to see possums, so that even if they are told the damage possums cause, they are less likely to dislike possums. Not to mention possum road kill may influence urban dwellers to have empathy towards them.

4.5 Other Features and Attitudes to Possums

When testing the correlation between attitudes to possums, and pet ownership, vegetarian status, and organisation-belonging status of participants, indications can be found in the tables below.

Table 13. Pet Ownership and Attitudes to Possums

Ethnicity		Have you had any pets at home?	
		Yes	**No**
Chinese	Other	46.2% (6)	92.3% (12)
	I don't like possums.	53.8% (7)	7.7% (1)
	Total	**100.0% (13)**	**100.0% (13)**
DoC	Other	21.7% (10)	0.0% (0)
	I don't like possums.	78.3% (36)	100.0% (4)
	Total	**100.0% (46)**	**100.0% (4)**

As we can see from the table above, Chinese people who reported having pets at home are more likely to hold anti-possum perceptions. Those Chinese who reported having perceptions '*other*' include those who have no idea about possums as well. Here the assumed reason is that Chinese people who reported having pets at home have been in New Zealand for a longer time than those who do not have pets in New Zealand. This is also supported by the table 'Pets Ownership and Lengths Staying In New Zealand' in Appendix 3. Those who have been in New Zealand for a longer time are more likely to know about possums than other people, hence will have more possibility to have anti-possum attitudes than others as well. The expectation that people with pets would be more sympathetic to the plight of possums was not supported. However, DoC staff members, who have mostly been in New Zealand for a long time, and who have pets, would be expected to be more into animal protection and will have more empathy toward possums as well (Signal & Taylor, 2007).

Table 14. Vegetarian Status and Attitudes to Possums

Ethnicity		Are you a vegetarian?	
		Yes	**No**
Chinese	Other	0.0% (0)	69.2% (18)
	I don't like possums.	0.0% (0)	30.8% (8)
	Total	**0.0% (0)**	**100.0% (26)**
DoC	Other	20.0% (1)	20.0% (9)
	I don't like possums.	80.0% (4)	80.0% (36)
	Total	**100.0% (5)**	**100.0% (45)**

There is no clear correlation indicated between vegetarian statuses and attitudes to possums, due to the rather limited sample size. The expectation was that animal protection organizations are contributing to animal welfare and members are more of animal advocates.

Table 15. Organisation Belongings and Attitudes to Possums

Ethnicity		Are you a member of any animal protection group or organisation?	
		Yes	**No**
Chinese	Other	0.0% (0)	69.2% (18)
	I don't like possums.	0.0% (0)	30.8% (8)
	Total	**0.0% (0)**	**100.0% (26)**
DoC	Other	14.3% (1)	20.9% (9)
	I don't like possums.	85.7% (6)	79.1% (34)
	Total	**100.0% (7)**	**100.0% (43)**

There are no Chinese participants who reported belonging to any animal protection group or organisations. DoC staff members who belong to animal protection groups or organizations are more likely to hold anti-possum attitudes. The reason may be that DoC members are fully educated or experienced with regard to the way possums damage the country, and aim to protect all the indigenous animals rather than introduced animals like possums, stoats, or

rabbits. As a result, DoC staff members protect and conserve indigenous animals through eradicating introduced animals, such as possums.

5 Knowledge Base and Perceptions of Possums

In this section, the researcher used data collected to answer some research questions. For example, how do Chinese people know about possums, what personal habits would influence their attitudes towards possums and other questions are investigated in the following paragraphs.

Table 16. Knowledge about Possums in Ethnicities

Possums…	Ethnicity	Disagree	Neither agree nor disagree	Agree	Total
are introduced by humans	Chinese	0.0% (0)	41.7% (5)	58.3% (7)	100.0% (12)
	DoC	0.0% (0)	0.0% (0)	100.0% (50)	100.0% (50)
carry and spread Bovine Tuberculosis (a disease which may cause cattle death)	Chinese	0.0% (0)	9.1% (1)	90.9% (10)	100.0% (11)
	DoC	6.0% (3)	6.0% (3)	88.0% (44)	100.0% (50)
damage houses	Chinese	0.0% (0)	45.5% (5)	54.5% (6)	100.0% (11)
	DoC	30.0% (15)	40.0% (20)	30.0% (15)	100.0% (50)
kill native birds and destroy their eggs	Chinese	0.0% (0)	25.0% (3)	75.0% (9)	100.0% (12)
	DoC	2.0% (1)	0.0% (0)	98.0% (49)	100.0% (50)
damage forests	Chinese	45.5% (5)	0.0% (0)	54.5% (6)	100.0% (11)
	DoC	2.0% (1)	0.0% (0)	98.0% (49)	100.0% (50)
are good economic resources	Chinese	18.2% (2)	36.4% (4)	45.5% (5)	100.0% (11)
	DoC	71.4% (35)	14.3% (7)	14.3% (7)	100.0% (49)

As discussed in previous sections, there are 26 Chinese people and 50 DoC staff members involved in the data analysis. Yet in above table, roughly 12 Chinese people answered this question series. Among those participants who did not answer these questions, those who have no idea about the possum issue are included as well. Some of the above statements about possums are copied from study done by Fitzgerald et al. (1996) and all have been proved scientifically. In the study, statements that possums carry and spread Bovine

Tuberculosis (BT), kill native birds and destroy their eggs, and damage forests were show results that were similar to my results. There were 80% of participants involved in study of Fitzgerald et al. (1996) who reported that they agree with the statement that possums carry and spread BT, in comparison with my results that 88% of DoC staff members agree with it and 90.9% of Chinese people do. There are 80% of participants from the survey of Fitzgerald et al. (1996) who agree with the statement that possums are a threat to NZ birdlife, compared with my results that 98% of DoC staff members and 75.0% of Chinese people believe so. Similarly, 95% participants in the study of Fitzgerald et al. (1996) agree with the statement that possums are a threat to NZ's forest, in comparison with 98.0% of DoC staff members. However, only 54.5% of Chinese people agree with the statement.

All the DoC staff members know about the fact that possums are introduced by humans, compared with only roughly 60% of Chinese people. The others hold a neutral perception to the statement.

Approximately half of the Chinese people reported that they agreed that possums damage houses, while the others reported being neutral. However, 30.0% of DoC staff members disagreed with the statement, possibly because they answered the question from experience rather than facts; they are reporting they do not have the experience of possums damaging their houses, rather than reporting the fact that possums can damage their houses.

When asked if they believe possums are a good economic resource, 45.5% of Chinese people held the positive perception, whereas only 14.3% of DoC staff members agreed. The possible reason could still be a different understanding of the question; DoC staff members would rather eradicate all the possums than raise them and treat them as an economic resource,

even though they may understand that possum products can be made and traded for profit. They disagreed about the word “good”, where possums are an economic resource. Chinese people who answered this question were possibly confirming the fact that they are satisfied that possums are an economic resource.

5.1 Perceptions of Possums

The preferences of all the participants toward possums are different between ethnicities as well.

Table 17. Perceptions of Possums by Ethnicities

Possums…	Ethnicity	Disagree	Neither agree nor disagree	Agree	Total
are/would be nice to have around	Chinese	27.3% (3)	63.6% (7)	9.7% (1)	100.0% (11)
	DoC	94.0% (47)	4.0% (2)	2.0% (1)	100.0% (50)
should be allowed to live in urban area	Chinese	36.4% (4)	45.5% (5)	18.2% (2)	100.0% (11)
	DoC	92.0% (46)	8.0% (4)	0.0% (0)	100.0% (50)
should be conserved	Chinese	30.0% (3)	60.0% (6)	10.0% (1)	100.0% (10)
	DoC	98.0% (49)	2.0% (1)	0.0% (0)	100.0% (50)
People should know more about possums and learn how to live with them	Chinese	9.1% (1)	18.2% (2)	72.7% (8)	100.0% (11)
	DoC	76.0% (38)	20.0% (10)	4.0% (2)	100.0% (50)

For all statements about preferences in relating to possums, the DoC staff members expressed a strong anti-possum attitude, which aligns with their attitudes to possums mentioned in section four. Conversely, Chinese people tended to be more neutral toward possums. There were 72.7% of Chinese participants who reported being willing to know more about possums and learn how to live with them, compared with only 4% of DoC staff members. In addition, 20.0% of DoC staff members held a neutral perception toward this statement, which indicates they do have concerns to some extent about possum issues in New Zealand.

There are still large proportions of Chinese people who reported neither agreeing nor disagreeing with some of the statements. There were 63.6% of Chinese who reported being neutral to '*possums would be nice to have around*', and 60.0% who reported being neutral to '*possums should be conserved*'. The reason for some of them reporting neutral perceptions could be that they are not familiar with possums so that it is hard for them to make a clear preference on about them.

6 Conclusion

As we can see from the above sub-sections, data received from the online questionnaire was rather limited. To be able to have some reflections on the online survey results, bridges among datasets described in the Methods Chapter (the ISSP, World Value Survey and Survey of New Zealanders) are setup to enable comparisons in the next chapter. Even though the profile data already presented shows they are rather different participant groups, further analysis could contribute to the data comparison and contrast.

What is important is the selection criteria for the data involved in the data comparison. Participants from ethnicities other than Mainland Chinese were excluded from the data comparison, because the survey of the public focused on only Chinese people. Also, people who have been in New Zealand for less than one year were taken out of the data analysis as well, as mentioned in the Methodology section, they are less likely to have interactions with people from ethnicities other than their own. However, as the Chinese sample has an uneven distribution of age, education, gender, and places of residence, the conclusion can only be used as a case study to help interpret some indications in other studies.

In conclusion, the Chinese sample received from the research survey has relatively higher education, younger age, higher female to male ratio, and more likely to live in an urban area than the DoC staff sample and the average New Zealand public. They also have stayed in New Zealand for a shorter time than DoC staff members have. Higher education may lead the Chinese in New Zealand to have certain knowledge in the environmental field and possums, which can be proved by the knowledge questions in the research survey. Living in an urban area tends to make Chinese people have fewer encounters with possums in the wild, but they might see them road killed. Also, females are more likely to be supportive towards animal protection, hence could be less anti-possum (Czech et al., 2001).

As a result, as people have been in the host country for a short time, mostly for less than 10 years, they may not have had encounters with possums, either saw them road killed, or experienced possums damaging their houses, or other encounters . Therefore, unlike DoC people who are equipped with sufficient knowledge of the possums' effect on what they hold precious in the country, native flora and fauna, Chinese people may have ambiguous attitudes toward possums. On the one hand, possums have the appearance which triggers human "*parental behaviour*" they are supposed to be cuddled and taken care of (Milton, 2011). On the other hand, possums damage other species, which has been acknowledged to everyone who comes to the country by possum products selling in gift shops, and by notice boards explaining how to kill possums located at national reserves, both of which can been seen by outsiders as their first image of possums (Milton, 2011). They have been '*told*' not to like possum by those expressions. The conflicting perceptions of Chinese people in New Zealand have been supported by the research findings. That is, there are no clear lines indicating Chinese perceptions of possums. This indeed could be because of the rather limited sample size. However, the differences between their intuitive feelings and what they

have been told, may be the most important reason for the rather different perceptions between Chinese people and New Zealanders.

There are several nationwide surveys investigating perceptions of people from different ethnicities in New Zealand in terms of pest species. However, even though the overall sample size is big, the population for Asian participants or Chinese participants is still small. As for ISSP 2010, there were only 30 Chinese people involved in the research. In The Sixth Wave of World Value Survey, 16 participants self-selected as Asian ethnic. In the 2015 Survey of New Zealanders, 3772 responses overall were received for the survey compared with 417 (11.1%) participants who self-selected as Asian. Yet, according to the 2013 Census data, there is 11.8% of the New Zealand population who reported as Asian[34]. That supports the fact that Asian participants or Chinese participants are under-represented in scientific researches. That is also the reason for this study being conducted, to fill the gap where there is insufficient data of Chinese people involved in social researches.

Combining datasets of the research with nationwide surveys, as well as qualitative interviews with Chinese academics in New Zealand, the following chapter will discuss in detail to answer the research questions regarding perceptions of Chinese people in nature and environment, in particular possums and pests, and social researches.

[34] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-culture-identity.aspx, 2013 census quickstats about culture and identity;

Chapter Five: Chinese People in New Zealand

1 Chinese People and Possums

China is one of the richest nations in the world in terms of species diversity of animals, two out of twenty-five world biodiversity hotspots are in China (Mittermeier, Mittermeier, Myers, da Fonseca, & Kent, 2000). Those species cover a wide range of latitudes and longitudes, varying greatly from north to south, in different provinces (Qian, 2007). Possums, in China, are used in scientific researches in the medication field, but not broadly known by the public (Bao, Xue, & Xu, 2015; Fang et al., 2014; Wang et al., 2014). People from southern provinces can see possum's meat on dishes or in meat markets (Pilarski, 1994). There is a species in China though, which looks similar to the possum, *guozili (Masked Palm Civet)*, and is broadly known as highly susceptible to causing a widespread infectious disease in 2003 across Asia, North America and Europe (Xiao et al., 2008).

The possum was introduced to New Zealand from its native habitats, Australia (Weihong & Clout, 2001). It soon became problematic to New Zealand's native flora and fauna, and is listed as a major pest species needing to be controlled in New Zealand (Parliamentary Library, 2000; Powlesland et al., 1999). Chinese people in New Zealand have mixed perceptions toward possums influenced both by what they have been told or experienced in China and in New Zealand. The mixed perceptions of Chinese people toward possums is one of the research questions that needed to be investigated.

This chapter analyses the research results, supported by secondary datasets, in order to discover the perceptions of Chinese people toward possums, and the knowledge of Chinese

people regarding the issue of possums in New Zealand. Also, perceptions of Chinese people to environment and social survey will be analysed.

1.1 Threat Species Definition

The research initially differentiates perceptions of Chinese people and New Zealand people in terms of some pest species in New Zealand.

Table 18. Extent These Species are Regarded as Pests

	Data Sources	Disagree it's a threat	Neutral	Agree it's a threat	Don't know	Total
Rats	Chinese	3.8% (1)	19.2% (5)	73.1% (19)	3.8% (1)	100.0% (26)
	SNZ Asian	6.00% (23)	11.00% (46)	74.00% (301)	9.00% (40)	100.0% (410)
	SNZ	3.00% (115)	8.00% (315)	85.00% (3421)	4.00% (162)	100.0% (4013)
Possums	Chinese	11.5% (3)	57.7% (15)	19.2% (5)	11.5% (3)	100.0% (26)
	SNZ Asian	7.00% (30)	12.00% (48)	68.00% (278)	13.00% (49)	100.0% (405)
	SNZ	2.00% (84)	7.00% (295)	87.00% (3443)	4.00% (161)	100.0% (3983)
Deer	Chinese	76.9% (20)	15.4% (4)	3.8% (1)	3.8% (1)	100.0% (26)
	SNZ Asian	48.00% (191)	15.00% (60)	12.00% (50)	25.00% (99)	100.0% (400)
	SNZ	33.00% (1285)	26.00% (998)	30.00% (1162)	11.00% (465)	100.0% (3910)
Domestic Cats	Chinese	65.4% (17)	15.4% (4)	11.5% (3)	7.7% (2)	100.0% (26)
	SNZ Asian	44.00% (180)	16.00% (66)	26.00% (104)	14.00% (53)	100.0% (403)
	SNZ	32.00% (1240)	23.00% (916)	40.00% (1581)	5.00% (215)	100.0% (3952)
Wild/feral Cats	Chinese	30.8% (8)	23.1% (6)	38.5% (10)	7.7% (2)	100.0% (26)
	SNZ Asian	14.00% (55)	13.00% (55)	52.00% (211)	21.00% (85)	100.0% (406)
	SNZ	5.00% (206)	10.00% (396)	79.00% (3124)	6.00% (266)	100.0% (3992)
Introduced Freshwater Fish	Chinese	42.3% (11)	23.1% (6)	26.9% (7)	7.7% (2)	100.0% (26)
	SNZ Asian	29.00% (118)	14.00% (57)	24.00% (96)	33.00% (135)	100.0% (406)
	SNZ	13.00% (515)	13.00% (503)	50.00% (2004)	24.00% (948)	100.0% (3970)

The question asking to what extent do they agree the species in the question is a pest, is copied from the Survey of New Zealanders conducted by the Department of Conservation in

2015. The table shows data results for Chinese people from the research survey, and SNZ from the 2015 Survey of New Zealanders. The Asian ethnic group from the SNZ 2015 is picked up specially to generate comparisons with that of Chinese people from the research. Since the research is focusing on the differences between Chinese people in New Zealand and people from other ethnicities in New Zealand, DoC staff member data is not included in the table above. However, they do show the strongest attitudes against all species. The possible reason is that they all clearly understand the consequences those species have had on flora and fauna in New Zealand, more than participants from any other samples. Also, as mentioned in a previous chapter, DoC staff members have mostly lived in New Zealand for over twenty years, and they all have experienced pest damage to some extent.

What needs to be mentioned is that, as the proportion of participants who are New Zealand European is the largest one in the Survey of New Zealanders, the total will reflect their perceptions, yet influencing and influenced by people from all the other ethnicities to some extent.

According to the report of the Survey of New Zealanders, when the significance level is set at 95%, Asian participants are significantly more likely to report they do not know about them in all species compared to other ethnicities in the same survey. The indication was that Asian people knew less about possums than other ethnicities from the survey. In addition, significant increases indicate that SNZ Asian are more likely to **disagree** that those species are a threat than all the other ethnicities in New Zealand as well.

a) Rats

I have calculated a standard deviation to testify the perception range of Chinese participants in terms of their preferences in rats[35]. This result is similar with that of SNZ, that 85% of total participants regard rats as pests, compared with 73% of New Zealand Asian. The possible reason is rats have been regarded as a pest species in China from the twentieth century, so that people are more likely to take rats as a threat even when they are not as harmful to the crops as in the last century (王泽清, 陈士强, & 邱祥志, 2010). However, in New Zealand, rats are detrimental to the native flora and fauna which are both valued by the country (A. Fraser, 2006; W. Fraser, 2001). Therefore, the New Zealand public has the strongest anti-rat attitudes.

b) Deer

Significant differences appear in other species. The standard deviation proves that Chinese people take deer as non-threat[36]. When we run confidence intervals in proportions for all the samples, when the confidence level is set up at 95%, the proportion of the SNZ Asian sample taking deer as non-threat is between 43.6% and 51.9%, compared with that of SNZ sample being between 31.6% and 34.7%. In terms of the limited Chinese sample, when we try to construct a confidence interval for Chinese sample, one value of n*p and n*(1-p) is below 10, which is the minimum requirement for a valid confidence interval. No confidence intervals can be run to test Chinese sample attitudes to deer at this stage. Hence, we are 95% confident that the SNZ Asian sample is more likely to vote deer as non-threat than the SNZ sample. However, from the research figure, we can still see Chinese people from the

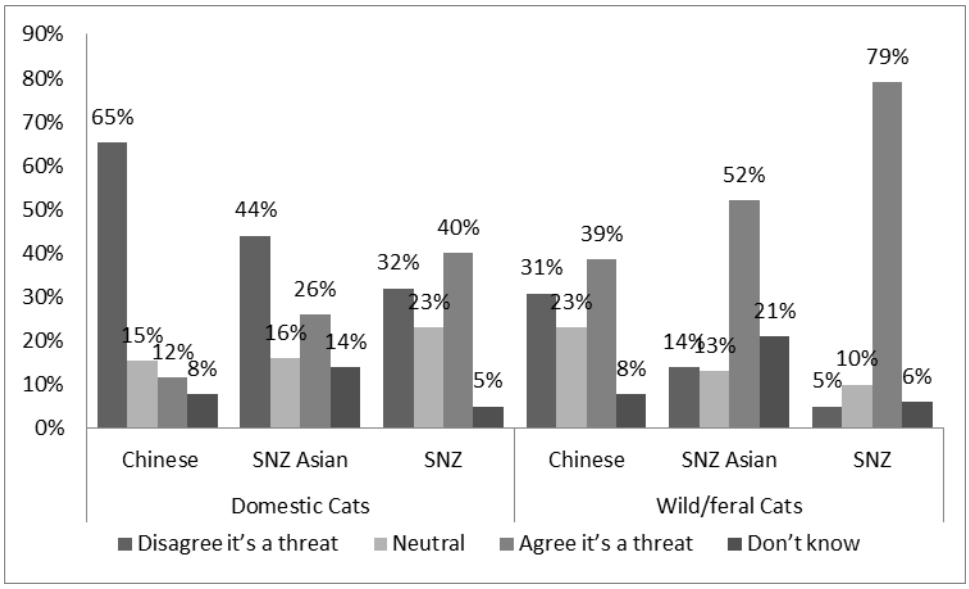
[35] Chinese participants in the survey indicate rats are threat, M=4.16, 95% CI [3.74, 4.58].
[36] Chinese participants in the survey indicate the perspectives of take deer as non-threat with M=1.91, 95% CI [1.57, 2.27]

research survey are more likely to vote deer as non-threat or hold neutral perception to deer. The possible reason is that velvet antler is regarded as a valuable ingredient in traditional Chinese medical research (刘向华 & 曹琳, 2001). Deer also indicates kindness and beauty in Chinese literature, and to some ethnicities in China (谢美英 & 谢长青, 2004). However, in New Zealand, deer damage the exotic forest species and are regarded as a pest and a threat to the environment in the country (Coomes, Allen, Forsyth, & Lee, 2003). All those backgrounds may cause the rather different result between Chinese people and New Zealanders.

c) Cats-Including Domestic Cats and Feral Cats

Comparing domestic cats and feral cats, both of which are similar looking to possums with pointy noses and big eyes, all the sample groups hold stronger negative perceptions toward feral cats than domestic cats, as shown in the figure below. Similarly, 40% of SNZ participants reported domestic cats as a threat.

Figure 8. Perceptions toward Domestic Cats and Feral Cats



When we run confidence intervals, we are 95% confident that there are between 40.6% and 48.8% SNZ Asian, and 30.2%-32.6% of SNZ total sample who regard the domestic cat as a non-threat to New Zealand's environment. Yet, there is only 10.7%-16.4% of SNZ Asian and 4.6%-5.7% of SNZ total sample who take feral cats as non-threat. Cats are introduced predators with significant impact on indigenous fauna in New Zealand (Farnworth, Dye, & Keown, 2010). Domestic cats are considered companions, and dependent on humans, whereas feral cats are self-sustained and live away from the centre of human habitation (Farnworth et al., 2010). The vulnerability and the connection with humans of the domestic cats made them more favoured than feral cats, even when they are the same species.

d) Possums

The most significant difference appears in the perceptions of possums. As show in Appendices 1 and Appendices 2, when talking about possums, DoC people showed strong attitudes in that 100.0% of them strongly agree to their being a threat to the New Zealand's native plants and other species. Only 25% of Chinese participants regarded possums as a threat, 68% Asian people from the survey of New Zealanders in 2015 believed them as a threat, and 91% of the general public agreed that possums are a threat to New Zealand's native plants, birds, animals or natural environments. When 95% confidence intervals were conducted, there were between 64.8% and 72.5% of SNZ Asian participants consider possums as a threat, compared with 85.5% to 87.3% of SNZ sample. There is a clear difference between the attitudes of SNZ general participants with SNZ Asian people.

Regarding changes in perception over time to possums, in the research survey a question was asked of all the participants. See Table 17.

Table 19. Attitude Changes of Each Ethnic Group

	Have you had any attitude changes toward possums?					Total
	Yes, I like them more now than when I first knew about them.	Yes, I like them less now than when I first knew about them.	No change, I still don't like them	No change, I still like them.	Not interested.	
Ethnicity Chinese	8.3% (1)	16.7% (2)	25.0% (3)	25.0% (3)	25.0% (3)	100.0% (12)
DoC	6.0% (3)	34.0% (17)	50.0% (25)	10.0% (5)	0.0% (0)	100.0% (50)

Some people indicated attitude changes. For those Chinese people who reported an attitude change, participants who reported liking possums more than before have been in New Zealand for 1-5 years, and those who reported liking them less than before have been in this country for over 6 years. For the DoC staff members, referring to the table above, 10.0% of participants reported still liking possums, and 6.0% of them reported liking possums more than before. When I examined the cross tabulation between the time DoC staff members have been in New Zealand, and their attitude changes, those DoC staff members who reported liking possums more now, have all been in New Zealand for over 20 years. In addition, of those DoC staff members who reported liking possums less now, 5.9% of participants have been in this country for less than 5 years, 17.6% of them have been here for 6-20 years. As mentioned before, those DoC staff members who reported liking possums either before or now like them as an animal, even though they are clear about the effects of possums. Hence, their attitude changes toward possums can be an interesting topic in future studies. Again, as the sample size is rather limited, no firm statements can be made on the relation of lengths of time participants stay in New Zealand to their attitudes to possums

e) Discussion

Overall, possible reasons for the perception differences are the backgrounds and characteristics of the participants. As Chinese participants from the research survey are

mostly young Chinese, who have been in New Zealand for a short time, they are not very aware of the species' effect yet, whereas DoC staff members, those who show anti-pest species attitudes the most, have had a long time experiencing the effects of those pest species and researching them.

Chinese people have clear perception preferences towards deer, and domestic cats compared to the other groups. Yet they have neutral perceptions or vague preferences towards species of possums, feral cats and introduced fishes. One possible reason for this would certainly be the limited sample size in the research. It might be another scenario when more responses are received in future researches. The other possible reason would be either they have not adequate knowledge for them to make a decision on the species, or it is difficult for them to decide if the species is a pest or not. For example, participants may understand introduced freshwater fish affect the bio-ecosystem in New Zealand, and understand that those fish species are a good economic source for both international and domestic tourism[37]. As a result, there is no clear decision made to categorize the species as a pest or not.

When the same question is asked of the public in New Zealand, from the Survey of New Zealanders, whose participants are selected from the electoral roll record[38], people who probably have been in New Zealand for life or over decades, a relatively stronger response would show up compared with the Chinese people in New Zealand. The SNZ sample is more likely to agree with all the species being a threat than the other two sample groups. However, ethnicities of those participants would still be a majority of New Zealand Pakeha or

[37]http://www.stats.govt.nz/~/media/Statistics/browse-categories/environment/natural-resources/marine/nz-marine-economy-1997-2002.pdf;
[38]http://www.doc.govt.nz/Documents/about-doc/role/visitor-research/methodology-2015.pdf, Methodology Report for the Survey of New Zealanders 2015.

European, or New Zealand Maori, who both understand the pest species in New Zealand to some extent. Hence, when the same question is asked of the Asian people from the electoral roll record, who are part of the SNZ sample as well, a milder perception generated is explainable. The perceptions of SNZ Asian toward those pest species sit in the middle of the perspectives of the SNZ group and Chinese group. They take those species as a threat not as strongly as SNZ but more than Chinese people, perhaps they have stayed in New Zealand for a long time, long enough for them to understand the detrimental effects of pests, but not as strong or as experienced in the same way as other ethnicities in the SNZ survey.

When conducting interviews with Chinese academics, they were asked, "*What would happen if the same pest species or the same pest problems happened in China*". All the participants were confident that it would not be a big problem because of the pest to human population ratio, and the density of the species, in terms of the massive territory of the PRC. The comparatively vulnerable eco-system, and high pest-human population ratio also helps explain pest issues in New Zealand and anti-pest attitudes of the New Zealanders.

1.2 Attitudes of Chinese People Toward Possums and Changes over time

Of the 26 Chinese responses received from questioning about their attitudes toward possums, seven participants reported liking possums, eight reported not liking them, and the remaining answers reported not knowing about them. Because of the limited number of responses collected for the question, no clear statement can be made to correlate the gender status with attitudes to possums.

In the Chinese sample, when asking about their perceptions about possums, there is no clear line to show the correlation between their lengths of time in New Zealand with attitudes to possums. Referring to the figure below, the longer time the Chinese people have

stayed in New Zealand, the fewer people claim they do not know about possums. However, insufficient data support, from survey data collected from the public, means this study cannot claim that the longer time the Chinese people stay in New Zealand, the more likely or less likely they are to become anti-possum advocates. However, when we combine those Chinese people who claim to like possums with those who claim they do not know about possums, a clearer trend can be seen from the following table.

Table 20. Combined Chinese People Attitudes toward Possums

		How do you think about them?		Total
		I don't like possums.	Other	
How long have you been in New Zealand?	1-10 years	25.0% (5)	75.0% (15)	100.0% (20)
	11-20 years	50.0% (2)	50.0% (2)	100.0% (4)
	More than 20 years	50.0% (1)	50.0% (1)	100.0% (2)
Total		**30.8% (8)**	**69.2% (18)**	**100.0% (26)**

From the Table above, a trend between the lack of favour of the Chinese people to possums gets stronger with the length of their stay in New Zealand but less reliable as numbers drop. It may be that people's ideas do not change over time; they are formed early on – even within 5 years – and little changes after that. When we tried to further test the significance of the relation through confidence intervals, as well as looking for statistical support, between lengths of Chinese people's stay in NZ with their attitudes to possums, three groups were generated in the data analyses; people who had been in NZ for 1-10 years, 11-20 years and more than 20 years. Rather high standard error means appeared in all the three groups, which proved there is no precise standard deviation in each group. The limited dataset received from the research survey has largely limited the result presentation. However, in future studies, if sufficient responses are received, a different scenario may show up in the

relation to the length of the immigrants' stay in the host country with their perceptions interactions.

2 Chinese People and Environment

This section discusses the outdoor activities Chinese people are involved in and their confidence level in some information sources. This will generate data on how likely Chinese people in New Zealand are to encounter nature and possums: the factors potentially influencing their attitudes to possums will be analysed as well. As supplementary data, this section supports the research results in the above section and may be useful as reference material for future research in a relevant research area.

2.1 Activities Questions

In the research questionnaire, questions enquiring about the activities the participants engage in are compared with the Survey of New Zealanders 2015. The researcher generated data results from the research survey and SNZ in 2015. The Asian ethnic group is picked up especially from the SNZ sample as well.

Table 21. Activities

Activities	Data Sources		
	Chinese	SNZ Asian	SNZ
Walking for less than 3 hours (1)	65.4% (17)	47.0% (121)	58.0% (1632)
Day walk (over 3 hours but not overnight) (2)	26.9% (7)	25.0% (63)	16.0% (453)
Overnight/multi-day tramp (3)	30.8% (8)	6.0% (15)	6.0% (157)
Sightseeing (4)	38.5% (10)	61.0% (156)	51.0% (1457)
Family or friends outing/picnic, BBQ etc., but not active recreation (5)	46.2% (12	44.0% (112)	35.0% (985)
Camping (6)	15.4% (4)	5.0% (14)	8.0% (214)
Hunting (7)	3.8% (1)	1.0% (3)	3.0% (86)
Mountain biking/biking (8)	15.4% (4)	1.0% (4)	6.0% (179)
Others (9)	3.8% (1)	7.0% (19)	10.0% (283)
Sample Total	**100.0% (26)**	**100.0% (255)**	**100.0% (2833)**

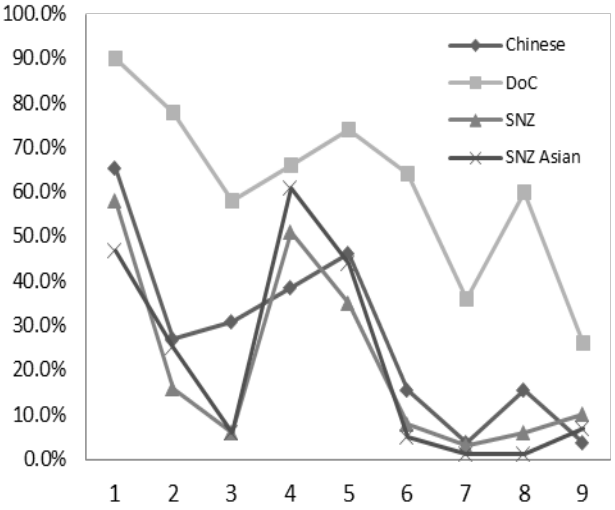


Figure 9. Activities

The DoC staff sample has the most active status in all the activities than all the other samples. They are not the focus in the study however. Hence, detailed data of the DoC staff sample will not be displayed in the table.

As seen in the chart, DoC staff members are more in favour of those activities than any other groups in all the activity types. Then the favourability of other groups varies depending on the activities. In the chart, number 1-9 represent the nine categories in the table above respectively. Here, the assumption is that the more outdoor activities the participants do, such as camping, hunting, the more chance there is for the participants to encounter possums or wilderness in New Zealand, so that they would have more visual idea about New

Zealand nature, and pests, particularly, possums. This assumption may help us to interpret the attitudes of DoC staff to all the other pest species as well, which we will discuss in the following paragraphs.

Some interesting findings can be seen from the table above. Chinese people have the most percentage (65.4%) active in walking for less than three hours a day above all the other groups, which can be interpreted by the rise idea of healthy lifestyle in China (蓝国彬 & 荆雯, 2010). Comparatively, SNZ Asian people are not much in favour of this activity, which only 47.0% of them reported doing, compared with 58.0% of SNZ participants overall. To clarify the differences among these groups, confidence intervals were conducted. We are 95% confident that the proportion of Chinese people in the research survey active in walking for less than three hours is between 50.0% and 80.8%, whereas that of SNZ Asian is between 41.9% and 52.2% and that of SNZ participants is between 56.5% and 59.5%. Hence, even though there are no clear differences between the Chinese sample and the other two groups active in walking for less than three hours, Asian people in the SNZ survey did indicate being less active in this activity than general New Zealanders.

In the family or friends outing/picnicking activity, barbecues are more popular in the Chinese group (46.2%), than the SNZ Asian people (44.0%) and the overall SNZ participants (35.0%). That can be explained by the relatively younger age of the Chinese participants than the other two groups, and they are more likely to have friend/family get together through a leisurely picnic. When the confidence interval was conducted, similarly, there were no clear differences between the Chinese participants and the other two groups. Yet, the NZ Asian group (38.8%-49.1%) does indicate being more active in family barbecues than the general participants (33.5%-36.5%) in SNZ.

Chinese people who reported being active in overnight/multi-tramp is the highest proportion of the three samples, reported as 30.8% of participants. In addition, the proportion of Chinese people active in mountain biking/biking in New Zealand is at the highest level (15.4%) in all the three groups. The potential reason for this is still the status of Chinese participants, mostly young people who would be more engaged in energetic activities like tramping overnight and biking.

The acceptance of sightseeing of the SNZ Asian group is at the highest proportion, between 55.9% and 66.0%, among all the groups, with 95% confidence level. There are only between 22.7% and 54.2% of Chinese participants active in sightseeing, and 49.5% and 52.5% of general participants of SNZ. Similarly, there is no clear difference between the status of Chinese participants and the other two groups. However, SNZ Asian people (55.9%-66.0%) indicate being more active in sightseeing than the general SNZ participants (49.5%-52.5%) are.

Generally speaking, Chinese people are active in outdoor pursuits to some extent. Interviews with the Chinese academics supported this finding. A professor researching in conservation and human wildlife interactions at Massey University, stated: "*It is very hard to access nature in China, as there is concrete everywhere. You have to drive a long way out of the city to be able to approach nature in China. However, in New Zealand, people are easily going to the beach, bush, reserve or so. You can find walking paths easily in New Zealand too. … But the case gets better now. There are increasingly more public parks in China with free entrance, which encourage people to have more outdoor activities. Also, there is a lot of information on mass media, like wechat, qq, which deliver messages on how to keep healthy and encourage people to live a healthy lifestyle. Chinese people in New Zealand do go to nature*

more than they used to or be able to in China. I have Chinese friends coming from different profession areas, from lawyer, businessperson, university lecturer, acupuncturist, and people working in other areas, they all go to nature a lot."

The Chairperson of Chinese Conservation Education Trust (CCET) also provided evidence that Chinese people are happy to engage in the outdoor activities in New Zealand. She stated: *"we often have domestic tours to some environmental conservation sites, or beaches, which all encourage Chinese people in New Zealand to have more contact with nature hence be more educated for the environmental conservation perceptions. During the trip, I explain the history of the conservation sites, and the purposes of the history sites. Unlike New Zealanders, who are more engaged in the activities more challenging, and activating, such as surf, rugby, hiking, and so on; my tours are more of historical visiting, and environmental educating, that we only walk and for short distances. They ALL LOVE those activities…*"

2.2 Questions about Confidence in Organisations

The question asking about the confidence in various information sources is referred from the sixth wave World Value Survey in 2010-2014. As listed in the below table, two datasets are used to compare with each other. Data under the category 'Chinese' are collected from the research surveys, and WVS dataset and WVS Asian are referred from the sixth wave World Value Survey 2010-2014. WVS Asian participants are included in the participants of WVS. Again, as the research respondents are rather limited, the responses are combined for larger numbers. Hence, responses of 'not at all' and 'not very much' have been combined as 'no confidence', and responses of 'quite a lot' and 'a great deal' have been combined as 'confidence'.

Table 22. Confidence in Information Sources

	Data sources	No Confidence	Confidence	Total
The Press	Chinese	23.1% (6)	76.9% (20)	100.0% (26)
	WVS Asian	63.6% (7)	36.4% (4)	100.0% (11)
	WVS	72.8% (555)	27.2% (202)	100.0% (757)
Television	Chinese	53.3% (8)	46.7% (7)	100.0% (15)
	WVS Asian	46.2% (6)	53.8% (7)	100.0% (13)
	WVS	63.0% (481)	37.0% (274)	100.0% (755)
The Government	Chinese	23.5% (4)	76.5% (13)	100.0% (17)
	WVS Asian	50.0% (6)	50.0% (6)	100.0% (12)
	WVS	50.5% (369)	49.5% (362)	100.0% (731)
Environment Organization	Chinese	28.5% (4)	71.5% (10)	100.0% (14)
	WVS Asian	41.6% (5)	58.4% (7)	100.0% (12)
	WVS	40.9% (290)	59.1% (425)	100.0% (715)

Dramatic differences appear at the acceptances to the press and the environmental organizations. More Chinese showed confidence in the press, the government, and environmental organizations than the WVS participants did. Because of the rather limited sample size for Chinese participants and WVS Asian, there are no confidence intervals, which can be conducted for any of the categories. Hence, we conducted confidence intervals for the WVS sample only. As a result, WVS sample participants trust all these information sources differently. They have confidence in environmental organizations (56.4%-62.5%), the government (46.5%-52.6%), television (33.4%-39.2%) and then the last, the press (24.0%-29.3%).

There were 71.4% of survey participants who trust in environment organization to some extent, compared with 59.1% of the public in WVS and 58.3% of WVS Asian. However, there

were only 12 Asians who answered the question in the 2010-2014 World Value Survey, which may not be representative of all the Asians.

Fewer survey participants from any group reported confidence in television and the differences between the groups are less. The interpretation assumes the characteristics of the Chinese survey participants; i.e. that they are all educated to some extent, as previously discussed, and that they would be likely to believe in, even rely on, the government report, academic studies and press, which are all officially publicized.

2.3 Priority Question

When enquiring about the priority of environment or economic growth, 90.0% of DoC staff members give environment top priority over economics, and the WVS Asian group members show the least proportion giving priority to environment. Chinese participants in my research indicate a higher proportion than that of WVS participants giving priority to environment. To testify the significance of the differences among these groups, confidence intervals were conducted for the Chinese sample and the WVS sample. As there are not enough respondents for the other two groups, which do not meet the minimum requirement for the test, no correlations can be found for the WVS Asian sample and the DoC sample. No correlations could be conducted for the Chinese people and the WVS Asian people either as there was not enough data received.

However, there are still trends that Chinese people tend to give environment more priority than economy, whereas the WVS Asian participants take the opposite position. A possible reason could be that the Chinese people in my research have a higher educational status and are more active in activities in nature than the average Asian people who participated in the WVS, so that they understand the importance of environment.

Table 23. Priority of Environment or Economic Growth

Data Sources	Environment has priority	Economic growth has priority	Others	Total
Chinese	60.0% (15)	32.0% (8)	8.0% (2)	100.0% (25)
WVS Asian	38.5% (5)	61.5% (8)	0.0% (0)	100.0% (13)
DoC	90.0% (45)	2.0% (1)	8.0% (4)	100.0% (50)
WVS	53.2% (348)	46.8% (306)	0.0% (0)	100.0% (654)

a) Most Important Issue in the Country

A similar question appeared in ISSP survey on environment in 2010; a question asking the participants the most important issue for the country at that time, was included in the survey, as the first question to people from all the ethnicities in New Zealand.

Table 24. The Most Important Issues in NZ Today

	China, Cantonese, Hakka, Mandarin	India, Hindi, Urdu, Gujarati, Tamil	Europe, White/ European	Maori and New Zealand	Pacific, Polynesian, Chamorro/ Guam	Other, mixed origin	Total
Health care	20.0% (6)	29.4% (5)	25.2% (227)	27.5% (28)	22.7% (5)	13.2% (5)	24.9% (276)
Education	10.0% (3)	11.8% (2)	15.3% (138)	10.9% (11)	18.2% (4)	13.2% (5)	14.7% (163)
Crime	16.7% (5)	23.5% (4)	12.9% (116)	19.6% (20)	18.2% (4)	23.7% (9)	14.2% (158)
The environment	6.7% (2)	5.9% (1)	7.9% (71)	14.7% (15)	18.2% (4)	10.5% (4)	8.8% (97)
Immigration	0.0% (0)	5.9% (1)	1.2% (11)	0.0% (0)	0.0% (0)	0.0% (0)	1.1% (12)
The economy	40.0% (12)	23.5% (4)	33.1% (298)	22.5% (23)	22.7% (5)	36.8% (14)	32.4% (356)
Terrorism	0.0% (0)	0.0% (0)	0.1% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)
Poverty	6.7% (2)	0.0% (0)	3.7% (33)	3.9% (4)	0.0% (0)	2.6% (1)	3.6% (40)
None of these, KR: politics	0.0% (0)	0.0% (0)	0.7% (6)	1.0% (1)	0.0% (0)	0.0% (0)	0.6% (7)
Total	**100.0% (30)**	**100.0% (17)**	**100.0% (901)**	**100.0% (102)**	**100.0% (22)**	**100.0% (38)**	**100.0% (1110)**

As seen in the table above, eight main topics were included, and economy was voted as the most important issue by 32.4% of participants. In ethnicities, 40.0% of Chinese participants took economy as the most important issue in the country, compared with 23.5% of Indian

participants, and 33.1% of European participants. When we conducted confidence intervals in all the ethnicities regarding the number who chose economy as the most crucial issue in the country, no clear differences could be found between Chinese with other ethnicities, Chinese (25.2%- 54.8%), European (30.5%- 35.7%), Maori (15.7%- 29.4%). However, European people did indicate more concern about the economy in New Zealand than Maori people did.

There were 8.8% of participants who regarded environment as the most important issue of the country. There were 6.7% of Chinese people who regarded environment as the most important issue, compared with 7.9% of European people, 14.5% of Maori, 18.2% of people from Pacific Polynesian, Chamorro/Guam.

Also, when combining Chinese and Indian people as one group to represent the Asian population in ISSP, also as a comparison with WVS, there were 6.4% of Asian people in ISSP regarding environment as the most crucial issue in the country, and 34.0% regarding economy as the most important issue. This result is rather different from the discussion in the previous paragraph, that roughly two thirds of participants in WVS Asian give the economic top priority over environment. A possible reason could be that first, Chinese people and Indian people do not equal what the Asian ethnicity refers to in the WVS which is also a very small number that is not representative of the whole Asian population in New Zealand. In addition, the question put to WVS participants forced them to choose between environment and economy, leaving no other options for them to choose, whereas multiple options in the ISSP question dispersed the responses received.

b) Concern Level to Environment

Also from the ISSP survey on Environment in 2010, when participants were asked how concerned they were about environmental issues, some findings appeared. There were 22 out of 29 (75.9%)Chinese participants who reported concern about the environment to some extent, compared with 785 out of 1099 (71.4%) of people from other ethnicities who expressed concerns. As the group size in the table is limited, confidence intervals can only be made for ethnicities of European, Maori, and total population. The results indicate that Maori people (80.1%- 91.4%) have more concern for the environment than European people (66.4%- 71.5%), or the total number of participants (69.3%- 73.8%).

Similarly, when we combine the Chinese sample and the Indian group together, as a robust representation of the Asian population in the ISSP survey, there were 17.4% of Asian people indicating no concerns for environmental issues, compared with 76.1% of them indicating concerns. In addition, we were 95% confident that there were 65.7%-86.5% of Asian people in the survey concerned about the environment

Table 25. Degree of Concern in Environmental Issues

	China, Cantonese, Hakka, Mandarain	India, Hindi, Urdu, Gujarati, Tamil	Europe, White/ European	Maori and New Zealand	Pacific, Polynesian, Chamorro/ Guam	Other, mixed origin	Total
Not Concerned	17.2% (5)	17.6% (3)	6.9% (63)	6.7% (7)	0.0% (0)	7.1% (3)	7.2% (81)
Neutral	6.9% (2)	5.9% (1)	24.1% (220)	7.6% (8)	13.0% (3)	14.3% (6)	21.3% (240)
Concerned	75.9% (22)	76.5% (13)	69.0% (629)	85.7% (90)	87.0% (20)	78.6% (33)	71.5% (807)
Total	**100.0% (29)**	**100.0% (17)**	**100.0% (912)**	**100.0% (105)**	**100.0% (23)**	**100.0% (42)**	**100.0% (1128)**

All the above statistics indicate that Chinese people do have concern for environmental issues to some extent. However, the limited sample size of the Chinese people from the research survey makes the representation of the result questionable. However, as a case

study, it is possible to interpret the results of the research. The Chinese research participants were well educated and mostly within the age group of 17-36 years, who most easily absorb information from the internet and mass media, hence will better understand the importance of the environmental issues occurring internationally. Conversely, WVS, SNZ and ISSP are those who live in New Zealand, have a general education background and more limited information sources, which, as mentioned preciously, affects the level of confidence to those information sources.

Moreover, after we conducted data analysis of the ISSP survey in ethnicities, people from a range of ethnicities did indicate various perspectives on some social issues. That is also the purpose of this study, from the researcher's point of view, who has been in New Zealand for four years, to investigate various aspects, which make up diverse perceptions of people from different ethnicities.

3 Chinese People and Social Surveys

We have discussed in previous sections Chinese people in social surveys in terms of perceptions and preferences in social factors. In this part, the acceptance of Chinese people of social surveys could be interpreted by differences in the number of people who have received the web link, the number of them who started the online survey, and the number who completed the entire survey.

As the survey link was posted on Skykiwi and Facebook, there is no figure indicating how many people have approached it on Facebook. However, we can find out how many times Skykiwi page has been looked at. As of 17th of May, three days after the last responses were received from the general public, there were 2933 people on Skykiwi who clicked in the web

page containing the research web link, whereas only 65 people started doing the online questionnaire, including people who clicked in the online survey from Facebook. There were only 37 research survey participants who completed the questionnaire, including people from all the ethnicities. To simplify the procedure, also as a robust figure indicating the participatory rate, we only took 2933 as people we approached though Skykiwi, 65 as people who started the survey and 37 as Chinese who finished it. The participatory rate received from the research survey of Chinese people was 2.2%, and 0.9% completion rate. There were 56.9% of Chinese people who started the survey who finished it. The actual figure for those rates would be lower when we have more precise figures for Chinese people who participated and completed. Ten out of the 65 people quit the questionnaire right after the consent question.

With the low response rate received from the online questionnaire, the research generated a rather casual investigation on Skykiwi, enquiring about the perceptions of the social survey online and face-to-face. Some commented they would not do the survey directly, while some commented that it would depend on whether there were any incentives for doing so, such as Fly-buy points, or supermarket coupons. For this investigation, five people out of 201 people (2.5%) who read the investigation commented giving their perspectives. However, those five people were all administrators or organizers of the section the investigation was posted to, so that they would be more likely to comment on every single topic under the section. However, their responses are still indicative of those who have seen the topics and did not respond.

4 Conclusion

New Zealand as an immigrant country has had a long history of immigrants coming from different countries. Early immigrants came mainly from European countries, with a colonial purpose. Asian people came to New Zealand starting from the mid-nineteenth century, aiming to earn money to support their family back in their home countries, at first through gold digging. As a minority ethnic group, Asian people had a dark time, experiencing discrimination as a minority. Yet, since adapting to and assimilating the culture, as well as intermarriages, the discrimination toward Asian people diminished. "*The main occupation of Chinese immigrants in New Zealand has changed from gold miner, fruit grower or vegetable grower, restauranteur, to occupations requiring high education levels*", according to a professor working with Chinese Immigrants in New Zealand and their intermarriages with Maori people at the University of Auckland. Until 2015, as what we have talked about in the Chapter Two, Asian people were already being viewed as the second-most important immigrant ethnic group in New Zealand, behind Australia. In 2015, 75% of New Zealanders view Asia as important to the future. Close to two-thirds of New Zealand people reported that they know nothing or only few about Asia. There were 82% of New Zealand people who think it is important to develop cultural and economic ties with the peoples and countries of Asia in 2015. Hence, it is important to investigate how Asian people think about the valuable environment and nature in New Zealand, which will help in future policy making.

As discussed in the previous sections, even with the limited data received from the research, key findings are still indicative.

Chinese people in New Zealand attend some outdoor activities, though not as much as New Zealanders. Hence, they have the chance to encounter pests, possums, and their effects to

some extent. From their cultural point of view, they do not like rats; they value deer, but comparatively have no idea about possums. They tend to indicate neutral points of view toward possums. However, there is a vague trend indicating they become less of an advocate for possums, as the length of time they spend in New Zealand increases. However, the limited data received from the research survey made the results less reliable. Future research can be conducted on attitude change of different ethnicities according to the length of time they spend in New Zealand. As also supported by the Massey professor, Chinese people believe in the press, which includes news from various sources, like Wechat and QQ, hence, when Chinese people have been encouraged by information received from the two sources, they are more likely to attend more outdoor activities, hence have more opportunities to view the effects of possums in person. Thus, Chinese people would have more anti-possum attitudes as the time they stay in New Zealand increases. In addition, Chinese people have concerns about the environment to some extent. The concern increases as their educational level increases. However, as the survey results received were limited, those statements still need valid and sufficient data support. Future studies can concentrate on large-scale quantitative research surveys to people of different ethnicities in New Zealand over time.

Chapter Six: Conclusion

New Zealand was colonised by the British government in the nineteenth century and possums came with early settlers for assimilation. They were expected to bring great economic profits to the early settlers, who came to New Zealand to earn a better living. People introduced possums without a clear understanding of the ecological implications of their actions or any regulations of the process. With uncontrolled importation, as well as the suitable living environment which had abundant food resources and no predators, the possum population increased dramatically. Indigenous plants were to be supplanted and regarded as subordinate by the colonial community so this was not seen as a problem at first. Local farmers indicated concerns to authorities about possums eating plants and birds eggs, as early as the mid nineteenth century, yet received limited help in resolving the possum issues in the early stages. With increasing numbers, possum issues became more severe from the early 1900s, and more appeals from local famers were raised. Regulations of possums have fluctuated, with the local authorities trying to balance the cost of the possum issue and the value of possum fur. Possum introduction was banned officially in the nineteen twenties. By the end of the twentieth century, the possum population was estimated at 50-70 million in New Zealand (Predator Free NZ Admin, 2016, November 10). The massive number of possums has resulted in severe damage to the flora and fauna in the country, and this was of particular concern from the middle of twentieth century. Native flora and fauna have become important to international tourism in New Zealand and an additional concern was the economic loss caused by possums directly and indirectly, and the fact that they are vectors carrying and spreading diseases potentially harming the health of humans and livestock.

Perceptions of the New Zealand public of possums are clear and consistent: they do not like possums and want them to be eradicated. However, with increasingly more immigrants coming to New Zealand, from Asian countries as well as the traditional European countries, and people from the Pacific Islands, components of ethnicities in New Zealand have become complex. People of different ethnicities came to New Zealand with their perceptions based on their cultural and historical backgrounds, and they may have different perceptions compared with those of New Zealand people in terms of social or environmental problems, such as the possum problem. Chinese people, as the second largest non-European ethnic group in New Zealand, have played an essential role in the social and economic development in New Zealand. Hence, it is important to discover how Chinese people think about possums, and how attitudes of Chinese people toward possums change over time.

This research investigates the cultural backgrounds behind perceptions of Chinese people in New Zealand toward possums and that of New Zealanders through quantitative survey research, supplemented by the qualitative research interviews and secondary data of the previous nationwide surveys. This study has attempted to generate a knowledge base about Chinese people in New Zealand and their ideas about aspects of society, economy and environment. There have been only a few studies analysing attitudes to possums of people of different ethnicities in New Zealand (A. Fraser, 2006; Sheppard & Urquhart, 1991); most of the recent studies used qualitative research methods (Potts, 2009; Wilkinson & Fitzgerald, 2006). In addition, there seemed to be no previous study researching any aspect of Chinese ethnicity in New Zealand using an online survey, and this was a topic that seemed to be suitable for testing this new method of accessing participants. This research study is rather exploratory, and can be used as a case study to guide future researchers. The survey was posted online regularly for a month and it received twenty-six valid responses from

participants who self-selected as Chinese. The comparatively small number of responses received limited the possibilities of research data results.

Hence, secondary data were re-analysed as comparisons with my survey results. Datasets from the ISSP 2010 survey on the environment topic, the Sixth Wave World Value Survey 2010-2014, as well as 2015 the Survey of New Zealanders were collected to provide a background for the case study. Some questions in my own research questionnaire were copied from those surveys. In order to have a better comparison between datasets, the Asian and Chinese groups were picked up as separate subsamples from all these three nationwide surveys, for a closer comparison with that of the Chinese sample from my own research survey.

In addition, several interviews with Chinese academics in New Zealand, whose research fields were related to the research topics, were carried out. An academic from Massey University researching in the field of possums and environmental science; an academic from Massey University working on Chinese immigrants; an academic expert in Traditional Chinese Medicine from Auckland; an academic from the University of Canterbury working on Chinese media and culture; an academic from the University of Auckland working in the acculturation of Chinese people in New Zealand; and the chairperson of the Chinese Conservation Education Trust were interviewed for their valued opinions on the research related topics.

The research discovered, as the Chinese participants involved in the research quantitative survey were of an average high educational level, they were not more concerned about the environmental issues than the others according to the ISSP survey. They also have some knowledge about pest control purposes and possum problems in New Zealand. Particularly,

they understand the possum damages to the country. With regard to pest species, perceptions of Chinese people had some similarity with those of New Zealanders. In relation to rats, which are also a pest species in China, and possums, which are broadly known as a pest species in New Zealand, attitudes are negative; Chinese people would be happy to see rats' population being controlled, which is similar to that of New Zealanders would be happy to see possums being controlled. However, as most of those Chinese people have been in New Zealand for less than 20 years, their perceptions towards possums were rather different from the perceptions of New Zealanders. There were a majority of New Zealanders (87%) who believe '*possum is a threat to New Zealand's environment and nature'*, compared with only 19.2% of Chinese people who agree with the statement. The significant differences between perceptions of New Zealand people and Chinese people in New Zealand make this study meaningful. For other pest species in New Zealand, such as deer, different opinions appeared between Chinese and New Zealanders. The possible reason is that deer is commonly used in Chinese traditional medication treatment, and that Chinese people value deer to some extent. New Zealand people are aware of deer damage to their precious fauna and flora and know they need to be controlled.

The research questioned the lengths of time the participants had stayed in New Zealand and their attitude changes to possums over years. Because there were only a limited number responses received, no significant attitude changes can be deduced from these questions. From the lengths of their stay in New Zealand, there should be indications that the longer time the Chinese people live in New Zealand, the more strongly negative is the attitude they hold toward possums. This could be used in future research as well, when the investigation can be repeated over years with specific ethnicities.

Regarding environmental issues, Chinese participants in the survey indicated they were more supportive of environmental protection than they were of economic growth in the WVS survey, but not in the ISSP survey. They were involved in activities in the natural environment, which made them value environment more than those who are not involved in such activities. When re-analysing the secondary datasets, there are no significant differences between Chinese people and other ethnicities in valuing environment. Future studies can concentrate on the attitudes to environment in different ethnicities. Even in existing national surveys ISSP and WVS, there need to be greater oversampling of some subgroups to allow meaningful conclusions to be drawn.

As a result of New Zealand being a country with multiple ethnicities, it has complex culturally-based perceptions towards any of the social issues. Regarding the possum issue, people from different countries with different cultural and historical backgrounds could have different perceptions towards possums and nature in New Zealand. Again, because of the rather exploratory feature of the research study, there is still a lot which can be done to achieve a better research result. The main problem was using a very general website, where my own friendship group was not one with a strong interest in environmental issues. The Skykiwi site was also full of people with other interests who were probably very busy and not expecting to do surveys advertised on that site. The implication is that large surveys attempting to create data from which generalisations can be drawn, are a problem, unless you can afford a sample from someone who has a panel, which is too expensive for students and not possible for such a specific group either. One company who helps distribute surveys was asked for a sample of Chinese immigrants, and they said they could not deliver this for any price. My approach in this thesis was different to that of other surveys which have used

panels of New Zealanders as a whole population, or which have used Facebook sites where people with a special interest gather to get a snowball sample for qualitative research.

Hence, future research can be generated in several directions, not just environmental perceptions. One direction could be to further explore the acceptance of Chinese people of social surveys or online surveys. The other direction could be how likely people from different ethnicities are to take a Facebook survey. To supplement the survey data, an online Facebook advertisement was generated to attract more people to engage in the research. However, only four people participated, out of a continuous seven days of advertising. Further research in this topic would be interesting to help understand subsequent Facebook online surveys as well.

Appendix 1: Human Ethics Committee Approval

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 364 2987, Extn 45588
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2016/01/LR

29 January 2016

Bo Niu
Department of Sociology & Anthropology
UNIVERSITY OF CANTERBURY

Dear Bo

Thank you for submitting your low risk application to the Human Ethics Committee for the research proposal titled "Possums, nature and culture".

I am pleased to advise that the application has been reviewed and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 25th January.

With best wishes for your project.

Yours sincerely

Lindsey MacDonald
Chair, Human Ethics Committee

Appendix 2: Information Sheet for Questionnaire Participants

Please read the following note before completing the questionnaire.

The brush tail possum was first introduced to New Zealand for developing a fur industry. However, since then it has caused problems to the environment (especially trees in our parks and reserves) and primary industry in New Zealand. Possums are regarded as enemy from valuable economic source when they were first imported into New Zealand. Since immigrants from all over the world live here, I wonder how everyone feels about possums? If people have different attitudes toward the same species, what are the reasons?

To explore the questions above, I invite you to fill out this online survey to gather data on perceptions of people in New Zealand coming from various cultural backgrounds. The questionnaire will include questions regarding hobbies, personal preferences, and information sources, as well as demographic features of the participants including questions about country of origin. Data on how you think about animals will be gathered as well. Questionnaire data will be recorded automatically by the software Qualtrics. It will take approximately 20 minutes of your time to complete the questionnaire. It is completely anonymous (nobody will know who took part, not even the researcher). You can make changes to your answers for one week after you first start the questionnaire. After that you can't remove your data from the study.

You may receive a copy of the project results by contacting the researcher at the conclusion of the project. I will post on Facebook/Skykiwi when the results are available.

The project is being carried out as partial requirement of the Masters in Arts by Bo Niu bo.niu@pg.canterbury.ac.nz under the supervision of Alison Loveridge, who can be

contacted at phone 03 3642981 alison.loveridge@canterbury.ac.nz. We will be pleased to discuss any concerns you may have about participation in the project.

A thesis is a public document and will be available through the UC Library.

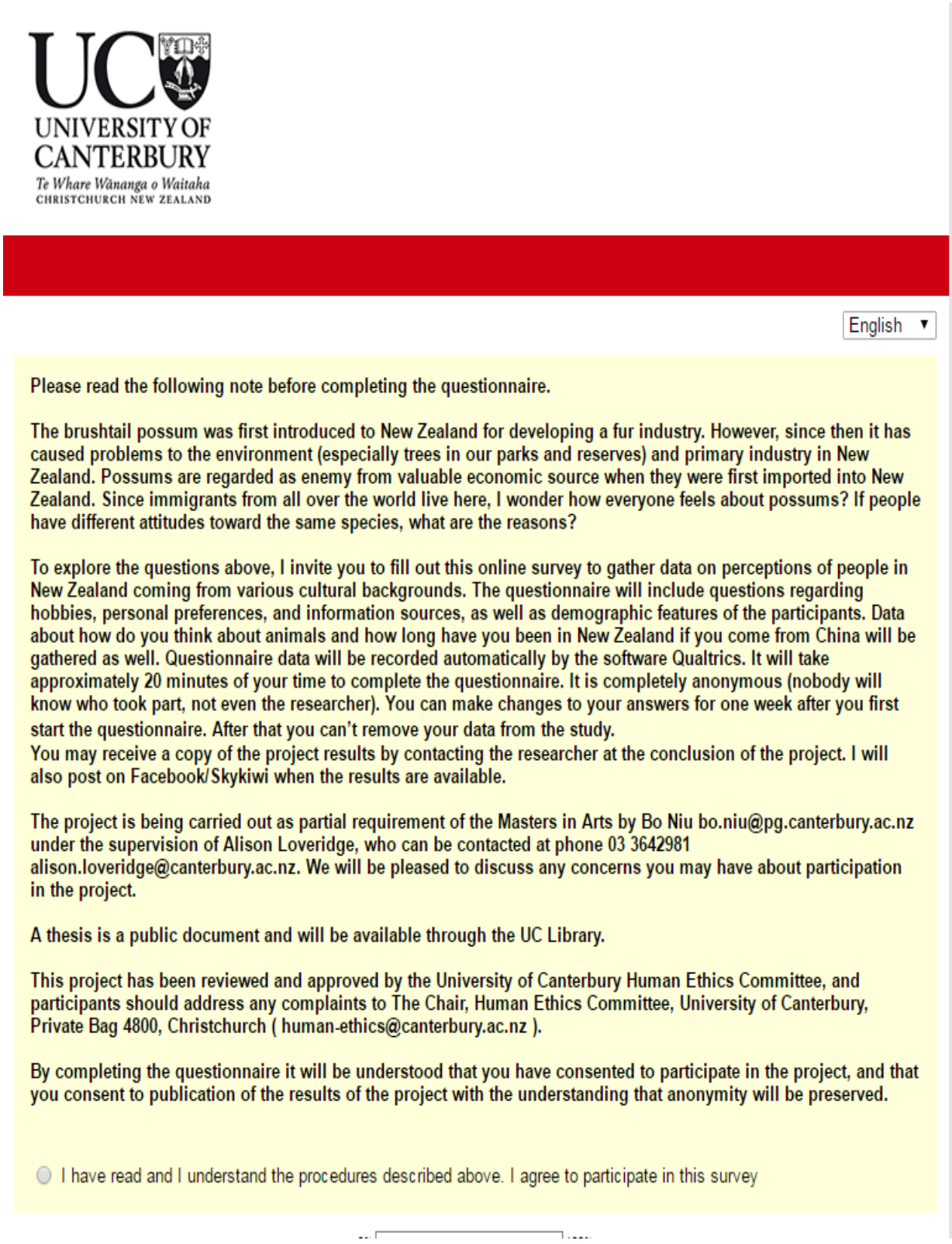
This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

By completing the questionnaire it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved.

☐ I have read and I understand the procedures described above. I agree to participate in the survey.

Appendix 3: Front page of online questionnaire to all the participants

1) Desktop Version



UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

English

Please read the following note before completing the questionnaire.

The brushtail possum was first introduced to New Zealand for developing a fur industry. However, since then it has caused problems to the environment (especially trees in our parks and reserves) and primary industry in New Zealand. Possums are regarded as enemy from valuable economic source when they were first imported into New Zealand. Since immigrants from all over the world live here, I wonder how everyone feels about possums? If people have different attitudes toward the same species, what are the reasons?

To explore the questions above, I invite you to fill out this online survey to gather data on perceptions of people in New Zealand coming from various cultural backgrounds. The questionnaire will include questions regarding hobbies, personal preferences, and information sources, as well as demographic features of the participants. Data about how do you think about animals and how long have you been in New Zealand if you come from China will be gathered as well. Questionnaire data will be recorded automatically by the software Qualtrics. It will take approximately 20 minutes of your time to complete the questionnaire. It is completely anonymous (nobody will know who took part, not even the researcher). You can make changes to your answers for one week after you first start the questionnaire. After that you can't remove your data from the study.
You may receive a copy of the project results by contacting the researcher at the conclusion of the project. I will also post on Facebook/Skykiwi when the results are available.

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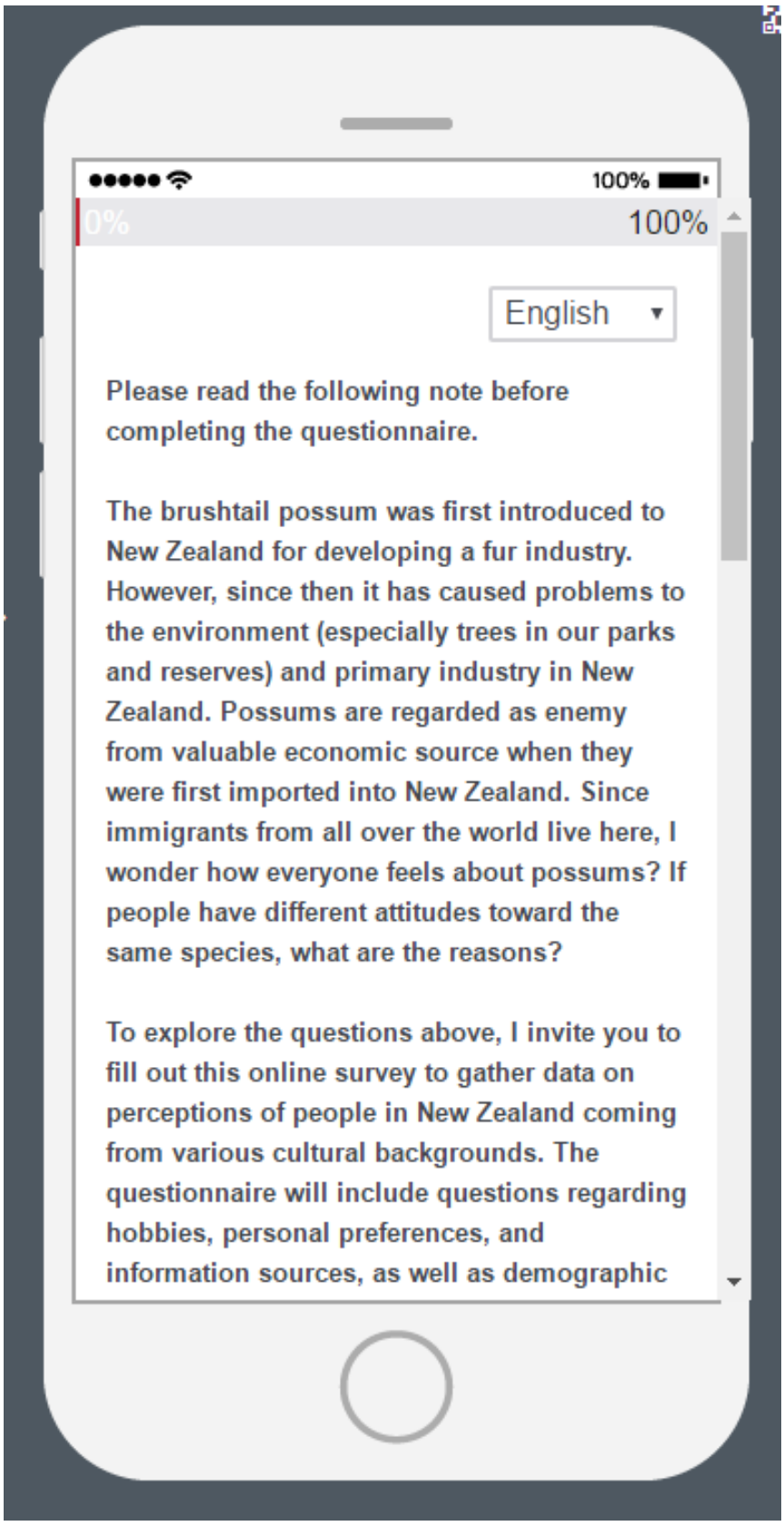
By completing the questionnaire it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved.

I have read and I understand the procedures described above. I agree to participate in this survey

2) Mobile Version



Appendix 4: Information Sheet for Interview Participants

College of Arts

School of language, Social and Political Sciences

Tel: +64 3 364 2899, Fax: +64 364 2614

Web: http://www.arts.canterbury.ac.nz/lsap

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Cultural Interactions of Chinese People in New Zealand

in Human-Animal Studies

I'm doing my Masters in Sociology, looking at differences in attitudes toward animals between Chinese immigrants and New Zealand people using possums as an example of potential for cultural interactions in the future. People may value possums and wilderness differently when they have various backgrounds. I intend to use an online survey to gather data of perceptions of people living in New Zealand coming from various cultural backgrounds, in order to compare and analyse the significance of factors behind culture and interactions with nature. As well as surveying the broad public, I would like to interview professionals in areas related to my topic. Interview data will be recorded and transcribed by the researcher. It will take approximately 30 minutes for interviews. You will be asked to provide your perception from your professional field, regarding the research topics. You may receive a copy of the project results by contacting the researcher who will send one at the conclusion of the project.

Participation is voluntary and you have the right to withdraw at any stage without penalty. All files and records related to you will be removed completely once you withdraw. You will be asked to sign a consent form before the interview to confirm that you are informed how your comments will be used and how your confidentiality will be maintained.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public without your prior consent. To ensure anonymity and confidentiality, tape records and notes of interviews as well as the signed consent forms will be kept separately in locked drawers so only the researcher can identify the source of the comments. All the physical data will be kept for five years in safe places, and fully destroyed after that. A thesis is a public document and will be available through the UC Library.

The project is being carried out as partial requirement of the Masters in Arts by Bo Niu bo.niu@pg.canterbury.ac.nz under the supervision of Alison Loveridge, who can be contacted at alison.loveridge@canterbury.ac.nz. We will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Bo Niu

Department of Sociology

Appendix 5: Consent Form

College of Arts

School of language, Social and Political Sciences

Tel: +64 3 364 2899, Fax: +64 364 2614

Web: http://www.arts.canterbury.ac.nz/lsap

Cultural Interactions of Chinese People in New Zealand

in Human-Animal Studies

Include a statement regarding each of the following:

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.

I understand that any information or opinions I provide will be kept confidential to the researcher and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the researcher Bo Niu, through bo.niu@pg.canterbury.ac.nz or supervisor Alison Loveridge, on alison.loveridge@canterbury.ac.nz for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz)

☐ Please send me a copy of the survey results at the conclusion of the project.

By signing below, I agree to participate in this research project.

Name:

Signature:

Date:

Appendix 6: Online Questionnaires

Possums, Nature and Culture

Q1 Please read the following note before completing the questionnaire. The brush tail possum was first introduced to New Zealand for developing a fur industry. However, since then it has caused problems to the environment (especially trees in our parks and reserves) and primary industry in New Zealand. Possums are regarded as enemy from valuable economic source when they were first imported into New Zealand. Since immigrants from all over the world live here, I wonder how everyone feels about possums. If people have different attitudes toward the same species, what are the reasons?

To explore the questions above, I invite you to fill out this online survey to gather data on perceptions of people in New Zealand coming from various cultural backgrounds. The questionnaire will include questions regarding hobbies, personal preferences, and information sources, as well as demographic features of the participants. Data about how do you think about animals and how long have you been in New Zealand if you come from China will be gathered as well. Questionnaire data will be recorded automatically by the software Qualtrics. It will take approximately 20 minutes of your time to complete the questionnaire. It is completely anonymous (nobody will know who took part, not even the researcher). You can make changes to your answers for one week after you first start the questionnaire. After that you can't remove your data from the study.

You may receive a copy of the project results by contacting the researcher at the conclusion of the project. I will also post on Facebook/Skykiwi when the results are available.

The project is being carried out as partial requirement of the Masters in Arts by Bo Niu bo.niu@pg.canterbury.ac.nz under the supervision of Alison Loveridge, who can be contacted at phone 03 3642981 alison.loveridge@canterbury.ac.nz. We will be pleased to discuss any concerns you may have about participation in the project.

A thesis is a public document and will be available through the UC Library.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

By completing the questionnaire it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved.

I have read and I understand the procedures described above. I agree to participate in this survey

Q2 How long have you been in New Zealand?

1) **Less than one year**

2) **1-5 years**
3) **6-10 years**
4) **11-20**
5) **More than 20 years**
6) **If Less than one year Is Selected, Then Skip To Gender**

Q3 Have/Had your parents been to New Zealand?

1) **Yes**
2) **No**

Answer If Have/Had your parents been to New Zealand? Yes Is Selected

Q4 How long have your parents been in New Zealand

1) **Less than 1 years**
2) **1-5 years**
3) **6-10 years**
4) **More than 11 years**

Q5 Are you a vegetarian?

1) **Yes**
2) **No**

Q6 Are you member of any animal protection group or organization?

1) **Yes**
2) **No**

Q7 What types of outdoor activities do you do, how often do you do it?

	Please tick all apply	**How often do you do it?**		
	Yes	less than 3 times a month	4-10 times a month	More than 11 times a month
Swimming				
Camping				
Biking				
Mountain biking				
Walking				
Picnicking				
Bush walking				

Other, please specify	
Other, please specify	

Q8 I am going to name a number of information sources. For each one, could you tell me how much confidence you have in them, and which one (ones) do you use as your information source?

	How confident are you in them				Which one do you use
	Not at all	Not very much	Quite a lot	A great deal	Tick all
Family					
Neighborhood					
People you know personally					
People you meet for the first time					
People who speak another language					
The Church					
The Press					
Television					
The government					
Universities					
Environment Organisation					

Q9 For those information sources we mentioned above, how important do you think it is?

Q10 Would you describe the place you live as

1) **A big city**
2) **The suburbs or outskirts of a big city**
3) **A small country of town**
4) **A country village**
5) **A farm or home in the country**

Q11 Have/had you had any pets at home? If YES, please specify(e.g. cats, dogs, etc)

1) **Yes, please specify _____**
2) **No**

Answer If Have you had/have any pets at home? Yes Is Selected

Q12 How long have/had you had pets?

1) **Less than one year**
2) **1-5 years**
3) **more than 5 years**

Q13 If you need to pick one from the two species below as a pet, which one would you choose?

Q14 The photo on the left was a possum, have you seen one before? Have you heard about possums before?

1) **Yes**
2) **No**

Q15 How do you think about them?

1) **I like possums.**
2) **I don't like possums.**
3) **I don't know about possums**

Answer If Have you heard about possums? Yes Is Selected

Q16 You have already told me that you've heard about possums, please indicate through which way have you heard about them. If you answer is not included below, please put in your answer in the end of this question.

	Tick everything applied	**If yes, please indicate does it have any influence on your attitude toward possum?**			**If with influence, is it mainly positive or negative?**		
	Yes	No influence	Some influence	Strong influence	Positive	Neutral	Negative
I have seen a live possum							
I have seen a dead possum							
I have talked about possums with my friends.							
I have heard about possums on TV, radio							
I have read about possums on a book							
I have done some research on possums							
I have heard about on internet							
I have heard about possums from my family							
I have heard about possums from the government or environment organisation							
Other, Please specify							

Answer If Have you heard about possums? Yes Is Selected

Q17 Have you had any attitude changes toward possums?

1) **Yes, I like them more now than when I first knew about them.**
2) **Yes, I like them less now than when I first knew about them.**
3) **No change, I still don't like them**
4) **No change, I still like them.**

Answer If The photo on the left was a possum, have you seen one before? Have you heard about possums before? Yes Is Selected

Q18 Please indicate to what extent you are agree with the following statements about possums:

Possums .....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
are introduced by humans					
are part of the urban landscape					
should be allowed to live in urban area					
should be conserved					
should have a right to exist in their natural environment					
are a good economic resource					
carry and spread Bovine Tuberculosis (a disease may cause cattle death)					
are/would be nice to have around					
can be used in medical research					
damage houses					
kill native birds and destroy their eggs					

damage forests
People should know more about possums and learn how to live with them

Answer If The photo on the left was a possum, have you seen one before? Have you heard about possums before? Yes Is Selected

Q19 Below are some sources that may have influence on our perceptions toward possums, please rank them from the one with strongest influence on your attitudes to the weakest. Please drag the source to the place you think it should sit on.

_____ Family

_____ School

_____ Friends

_____ Newspaper/radio

_____ Internet

_____ TV

_____ Government statement or policy

_____ Others, please specify,

_____ Don't know

Q20 Which sources make your attitude toward possums more positive? Choose all the sources with positive influence on your perceptions.

Q21 The following is a list of species that have been introduced to New Zealand. Based on what you have seen or heard, to what extent do you believe each is a threat to New Zealand's native plants, birds, animals or natural environments?

	1	2	3	4	5	Don't know
Rats						
Mice						
Stoats						
Possums						
Deer						

Domestic cats
Wild/feral cats
Introduced freshwater fish (other than trout, such as Koi Carp and catfish)

Q22 There are a number of ways that species considered to be pests can be controlled. For each of the possible ways listed below, please indicate your general attitude using this method of pest control.

	Should never be used in any circumstances	Should only be used as a last resort	Am reasonably comfortable with this method as long as appropriate controls are in place.	Have no concerns at all about this method	Don't know
Hunting					
Trapping					
Poison bait laid by hand					
Poison bait laid by aircraft					

Q23 There are two statements talking about the priority status of environment protection and economic growth, which one do you agree?

1) **Protecting the environment should be given priority, even if it causes slower economic growth and some loses of jobs.**
2) **Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent.**
3) **Other, please specify _____**

Q24 How many properties do you own in New Zealand?

1) **None**
2) **One**
3) **More than two**

Q25 Ethnicity

1) **Mainland Chinese**

2) **NZ Maori**
3) **NZ European or Pakeha**
4) **Pacific island**
5) **Other European**
6) **Others, please specify _____**

Answer If Nationality China Is Selected

Q26 How much do you think you are accepted by society in New Zealand?

1) **Not accepted at all**
2) **not accepted**
3) **Neutral**
4) **Somewhat accepted**
5) **Very well accepted**

Answer If Nationality China Is Selected

Q27 Were you aware of possum issue before you came to New Zealand?

1) **Yes**
2) **No**

Q28 Gender

1) **Male**
2) **Female**

Q29 What year were you born?

Q30 Which of these categories best describes your highest formal qualification?

1) **No formal qualification**
2) **School qualification only (School C, UE, Bursary, NCEA etc)**
3) **Trade or professional certificate**
4) **Diploma below Bachelor level**
5) **Bachelor's degree**
6) **Post-graduate or higher qualification**

Q31 In the end, what do you want to say to the researcher regarding the possum issue?

Appendix 7: Interview Questions for Chinese Academics

1. Please tell me a story about a recent encounter you have had with the natural environment.

2. How does the typical way that you interact with nature in New Zealand compare with a typical interaction with nature in China?

3. How does Chinese culture fit into New Zealand outdoor culture?

(History, Attitudes to conservation)

4. How do Chinese people respond to NZ's forests and rare species when they arrive here?

5. Can you tell me how much do you know about the situation with possums in New Zealand?

6. How do you think it would be handled if possum issue were to happen in China?

7. Have you ever had an interaction with the possum situation in New Zealand? Please tell me about it.

8. What do you think the attitude of Chinese people getting involved in social surveys?

Is there anything else you want to talk about regarding nature and culture in New Zealand?

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